



ESTABLISHED 1878.

VOL. XIX, No. 11.

CLEVELAND---MARCH 17, 1898---CHICAGO.

\$2.00 Per Year. 10c. Single Copy

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To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interests of Lake Carriers, and improve the character of the service rendered to the public.

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### TANK FOR TESTING MODELS.

The ship model tank being built at Washington by the United States Navy will cost about \$100,000. It will be a concrete lined basin, surmounted by a brick building 500 feet long by 50 feet wide, the basin itself being 470 feet long by 43 feet wide by 14 feet deep. One end of the basin, for about 70 feet of its length, is restricted in width to six feet, and here the miniature ships will lie previous to being started on their voyages along the tank. At the other end of the basin the width will be restricted to eight feet for a length of about 30 feet. On each side of the basin, for its whole length, will be iron rails supporting the ends of a carriage spanning the basin, this carriage being propelled along the tank with the model and measuring dynamometer attached, the model being guided along while still floating freely in the water. The carriage, with all dependent on it, is driven along the tank by four electric motors, taking current from a wire by means of trolley poles. The degree of resistance encountered by the model in passing through the water, also the time taken and the distance traversed, are all recorded diagrammatically and by electrical means. Hydraulic brake cylinders on each side of the carriage provide for stopping the carriage when run at very high speeds. The models experimented with will be one-twentieth of the actual size of the vessels, the model for a 400 foot ship being thus 20 feet long. Tests will be made with models for merchant vessels as well as warships, and special experiments will be conducted as to the effects of propellers of different sizes and shapes, and the effects of the shape of the after-end of vessels upon the efficiency of the propeller.

### LAUNCH OF NAVAL VESSELS.

The officers of the Newport News shipyard announce that the double launching of the battleships Kentucky and Kearsarge will take place March 24, and will be the first

double launching of first-class battleships in the world. Governor Bradley and staff will travel from Kentucky and Miss Christine Bradley, his daughter, will christen the Kentucky, while Mrs. Winslow, wife of Lieutenant Winslow, U. S. N., will stand sponsor for the Kearsarge.

The ships can be put in commission in less than six months if necessary. The Illinois, the third big battle ship building at Newport News, is only a month or two behind her sister ships.

### NOTICE TO MARINERS.

UNITED STATES OF AMERICA—NORTHERN LAKES AND RIVERS—MICHIGAN.

TREASURY DEPARTMENT,  
OFFICE OF THE LIGHT-HOUSE BOARD,  
WASHINGTON, D. C., March 14, 1898.

WRECK OF CITY OF DULUTH LIGHT.—Notice is hereby given that, on March 8, 1898, a fixed white lens-lantern light was established to mark the wreck of the steamer City of Duluth, sunk in Lake Michigan on the N. side of the entrance to the harbor of St. Joseph.

The light is shown at a height of 55 feet above mean level, from a mast rising from a cluster of piles located about 100 feet to the southward of the bow of the wreck, about 200 feet to the westward of its stern, and about 450 feet from St. Joseph Pierhead Range Front Light, on the north pier at the entrance to the harbor.

Vessels should not pass to the northward of the light, as the space between the light and the wreck is filled with wreckage.

By order of the Light-House Board :

W. S. SCHLEY,  
Commodore, U. S. Navy, Chairman.

### REGULATIONS FOR OIL CARRIERS.

A dispatch from Ottawa says that regulations have been prescribed for the transportation of coal oil in tank ships as authorized last session. They provide that petroleum, which will not flash at a lower temperature than 85° Fahrenheit may be imported in tank ships at the following ports, and at any others which may from time to time be designated by the Governor-General-in-Council: Halifax, St. John, Quebec, Montreal, Prescott, Brockville, Kingston, Port Hope, Cobourg, Toronto, Hamilton, Port Dover, Port Stanley, Windsor, Sarnia, Goderich, Port Arthur, Owen Sound. Every tank ship arriving at any of these ports having on board petroleum in bulk must hoist a red flag bearing the word, petroleum, and keep the flag flying during the hours of daylight while any petroleum is on board, and during the same period must by night display two red lights vertically not less than twenty feet above the deck. The discharge of petroleum imported in bulk from a tank ship must be effected by means of a hose and wrought iron pipe between sunrise and sunset. The discharge of petroleum from any one tank ship must not occupy more than twenty-four working hours, unless the time has been extended by the harbor-master for sufficient and specific reasons. No other ship or vessel of any kind shall go alongside any wharf at which a tank ship is discharging her cargo. Every tank ship shall, as soon as the cargo has been discharged, be cleaned and ventilated, by the removal of all oil and vapor, unless she forthwith proceed to leave the waters of Canada.

In the United States District Court owners in the Vega Steamship Co. commenced suit for salvage for saving the Rosedale, her crew, and cargo. The petition recites that the steamer Vega remained alongside the disabled Rosedale for almost two days, and finally succeeded in towing her to Port Colborne. The court is asked to allow a sufficient amount for the work.

## NEW VESSELS CLASSED BY LLOYD'S REGISTER DURING 1897.

During 1897, 495 new vessels of 775,144 tons, have been classed by Lloyd's Register. Of these vessels, 450 of 730,166 tons are steamers, and 45 of 44,978 tons are sailing vessels. Corresponding roughly with the general movement of the shipbuilding industry, the present return shows a decrease of 48 steamers of 123,413 tons and 15 sailing vessels of 22,404 tons as compared with the similar figures for 1896.

98.5 per cent. of the tonnage classed has been built of steel; and about 1.2 per cent. of iron.

Sailing tonnage, which formed 25 per cent. of the total tonnage classed in 1891, 30 per cent. in 1892, and 18 per cent. in 1893, forms less than 6 per cent. of the present total, notwithstanding the large sailing tonnage built in France under the supervision of Lloyd's Register.

Among the vessels classed during the year—besides passenger and cargo vessels of ordinary types—are 7 steamers of the trunk-deck type; 2 steamers to carry oil in bulk, one of them burning liquid fuel; 34 yachts; 133 steam fishing vessels (principally trawlers); 9 steamers for channel and river service; and 30 tugs, dredgers, barges, etc.

The average size of the steamers classed during the past year is about 1,622 tons, and of sailing vessels about 1,000 tons. Excluding vessels under 200 tons, in order to avoid the diminution caused by yachts, trawlers, etc., the comparative averages for the past few years stand as follows:

	1897	1896	1895	1894	1893	1892	1891	1890
Steam average	2,452	2,555	2,647	2,219	2,356	2,212	2,100	1,971
Sail average	1,741	1,826	1,607	1,816	1,684	1,889	1,696	1,783

During 1897, 24 steamers of over 5,000 tons each have been classed as compared with 31 during 1896 and 17 during 1895. Of these 24, 8 belong to Japanese owners. Six sailing vessels of over 2,500 tons have been classed in 1897, all having been built in France. The largest steamers classed during the year now under review are the Egypt, 7,912 tons, Milwaukee, 7,317 tons, and Monarch, 7,296 tons. The largest sailing vessels are the Dunkerque, 3,338 tons, Atlantique, 3,094 tons, and Loire, 3,094 tons. The largest sailing vessel built in the United Kingdom, which was classed during 1897, is the Australian, 2,102 tons.

Of the tonnage classed during the year, 684,421 tons, or 88 per cent., have been built in the United Kingdom. Among the foreign countries, Germany and France contribute the largest amount of tonnage.

The return includes a statement showing the countries for which the vessels have been built. 526,601 tons, or 68 per cent., have been built for the United Kingdom, and 248,543 tons, or 32 per cent. for other countries. Japan leads with 66,337 tons; Germany has 44,925 tons; France 31,565 tons; and Denmark, 19,214 tons.

### DEEPENING SANDUSKY HARBOR.

John Stang, the well-known Lorain dredging contractor, has been awarded the contract by the Baltimore & Ohio and Columbus, Sandusky & Hocking railways to dredge the slips at the coal docks in Sandusky. The work will be commenced at once. The Baltimore & Ohio slip will be dredged to a depth of 20 feet, as will also the Short Line slip. At the Baltimore & Ohio a cut 75 feet wide will be dredged and will be deepened inshore from the government channel, a distance of about 500 feet. The work is to be completed as soon as possible and it is expected that improvements at both docks will be finished about the time navigation is fairly well opened.

United States battleships are named for states, cruisers for cities, gunboats for distinguished men. The government steam tugs and small boats that carry supplies to the light-houses are named for trees and flowers.



## NEWS AROUND THE LAKES.

## DETROIT.

*Special Correspondence to the Marine Record.*

The St. Clair river is now open to Algonac.

Dunbar & McMillan's new steel passenger steamer built at Wyandotte for the Lake Michigan trade, will be christened America.

Advices from Washington indicate a change in the personnel of the Sault Ste. Marie canal officials. It is intimated that a new superintendent and three new assistants will be appointed.

The Michigan & Ohio Car Ferry Co. have again opened offices in the Parker & Millen building, and are getting ready for the opening, about April 1. The same boats that were used last season will start this year.

A. M. Carpenter, secretary of the new Lumber Carriers' Association, has notified members that the required amount of tonnage has now been enrolled and that the Association may be considered fully organized on a permanent basis.

Much has been said regarding the late starting of passenger boats this summer, but it is now learned that the Detroit and Cleveland line will start its first steamer on Monday morning, March 21, and furthermore the aids to navigation are all to be placed and attended to.

Manager Charles W. Thompson announces that the steamer Pilgrim, of the Thompson line, will leave Detroit on Tuesday evening, March 22, at 11 o'clock, for Alpena and way ports, being the first boat of the season up the lakes. The steamer Douglass will follow on Thursday.

The stage of water at the head of Lake Superior is 20 inches lower than it was in August last. It has not been so low before in many years. According to advices from Ashland and Sault Ste. Marie the water at those points is 12 inches lower than at this time last year, which means a great deal to large carriers.

The passenger lines are shaking things up, and the D & C Line will start a boat for Cleveland on Monday. The steamer Promise will take an excursion to the flats on Sunday. The Star Line will open the season for river points with the Arundel on Sunday. Ashley & Dustin expect to have the steamer Wyandotte in commission by April 1, and the Kirby by the 11th.

John H. Galwey, United States supervising inspector of steam vessels, expects to be decapitated at any time, although his term does not expire until October. Mr. Galwey is a Cleveland appointee. State senator, Charles W. Westcott, of St. Clair, and Capt. James Brown, of Cheboygan are applicants for the position, and it is understood that there are a couple of Chicago men making efforts to secure the appointment.

It was recently announced by the executive committee of the newly organized Lumber Carriers' Association that more than 60,000 of tonnage had been enrolled and that the association was on a firm foundation and ready for business. The Alpena firm of Gilchrist & Fletcher, which it was erroneously said a few days ago would not join the organization, is among the signers. The established rates are said to be uniformly satisfactory among shippers.

Another new rule of the United States steam vessel inspection service requires that all steam whistles shall be placed not less than six feet above the top of pilot-house, where the height of the smoke-stack will admit the attachment of the same below its top when not hinged for passing under bridges. The attention of owners of steam vessels is directed to this matter, in order that the necessary change may be made in connection with the work of fitting out for the season. This change regarding the placing of the steam whistle is no doubt made so that the sound may not be intercepted by any deck obstruction such as the pilot house would be under certain conditions.

It is reported that a New York capitalist has offered to back two Detroit men in the erection and operation of a mammoth shipbuilding plant near New York. The offer was based on a recently published letter from Andrew Carnegie, in which he stated that he could deliver steel plates from Pittsburgh to New York much cheaper than they can be made in England and delivered to the Clyde. He claims that he can make and deliver the manufactured steel for \$23 per ton, which is about \$7 cheaper than the price in England. The matter is being given careful consideration, but the names of the Detroiters have not been made public.

Mr. Walter Campbell, president of the Detroit River Ferry Co., has received artist's proofs of the marine views which accompany a story of the lakes in March St. Nicholas. The sketches were made by Howard F. Sprague. They show scenes along the Detroit river; a fleet released from the ice in the "Soo" river by Algoma; the "Soo" canal with one of the Northern Steamship passenger boats, and several other craft being lowered in the locks; the whaleback model passenger steamer Christopher Columbus on Lake Michigan; a whaleback cargo steamer in a seaway; the ice crusher Ste. Marie in a snow storm, plowing through the ice; the steamer North Land leaving Buffalo with W. J. Connors' yacht Enquirer, throwing the rays of her searchlight on the big boat; the steamer City of Mackinac on Lake Huron on a moonlight night; several boats fast in the ice in the "Soo" river, and the big ore docks at Ashland, with steamers taking on cargoes. The views are good specimens of

marine scenes. A copy of the proofs has been sent to the Photochrom Co., and they will probably be reproduced.

It is possible that machinists who have had to be contented to lay idle for about three months each year will take advantage of the offer now made by "Uncle Sam," in fact quite a number have already made inquiries from the naval officer stationed aboard the Yantic here. Regarding machinists it is given out that they are rated in three classes, chief machinists, machinist, first-class, and machinist, second-class. The chief has charge of an engine room watch, and receive \$70 per month; those of the first-class must have at least a year's experience with marine engines and receives \$55 per month; the second-class machinist, one who has had no marine experience, gets \$40 per month. All must be machinists by trade. There used to be twenty-two grades of marine engineers, according to the rules of the Board of Supervising Inspectors of Steamboats, but within a few weeks six of these grades have been lopped off and there are now only sixteen chances to obtain a government license of competency after undergoing a voluntary examination. A marine engineer or machinist is well treated in the United States navy and his pay, position and rations are certain.

## CHICAGO.

*Special Correspondence to The Marine Record.*

At Miller Brothers' shipyard the tug M. Shields is in dock for calking.

Captain A. Waskow has again been appointed master of the schooner Lake Forest.

Captain John Prindiville chartered the barges Tasmania and A. Stewart for corn to Kingston at 3½ cents.

The steamers City of Venice and Waldo Avery arrived at South Chicago from Milwaukee, Monday, to load grain.

The steamers Pickands and Germanic and barges Clint and Emma C. Hutchinson were chartered for corn to Kingston at 3½ cents.

The Independent Tug Line have their tug W. H. Wolf on their floating dry dock for a thorough rebuild, a new boiler and steam steerer.

James A. Calbick & Co. chartered the steamers Rube Richards and Toltec and barges May Richards and Miztec for corn to Kingston at 3½ cents.

The U. S. revenue cutter is now lying at 106th street, Calumet river, where she is being fitted out for the coming season. She will go into commission April 1st.

The Graham & Morton Transportation Co.'s steamer City of Milwaukee will be put on the route between Chicago, St. Joseph and Benton Harbor, on April 15th.

The Dunham Towing & Wrecking Co. towed the steamer W. P. Ketcham to Armour's B elevator, the steamer Roumania to the Galena elevator to load grain.

Wm. Saville, ship joiner, is giving the schooner S. M. Stephenson new rails, some new stringers, and general repairs to her topsides; the schooner Fannie Neil new rails and new deck.

Chief Engineer A. L. Wilcox, of Cleveland, stayed in this city during Thursday last, while waiting for a train to take him to Duluth, where he will fit out the machinery of the steamer Mesaba.

J. J. Rardon & Co. chartered the steamer Arizona and barges Plymouth and Scotia for corn to Port Huron at 1½ cents, the steamer Phenix and barges Northwest and Interlaken for corn to Buffalo at 1½ cents.

Capt. John Prindiville has chartered for the Hines Lumber Co., Chicago, the barges Fryer and Marvin for the season. It is understood that the company has an option on those boats for an outright purchase.

The Graham & Morton Transportation Co. have opened up the season with their steamer City of Louisville, which leaves Chicago for St. Joseph and Benton Harbor on Tuesdays, Thursdays, and Saturdays, at 11:30 p. m.

The steamer Rube Richards and consort May Richards arrived at South Chicago from Manitowoc to load grain. The May Richards went into dry dock at the Chicago Shipbuilding Co.'s for repairs and calking prior to loading.

Capt. Geo. Pardee left here last Saturday for Holland, to commence fitting out the steamer Soo City, of the Holland & Chicago Trans. Co. It is the intention of the company to begin this season's business about the middle of April.

The spring schedule of the Goodrich Transportation Co. is as follows: To Racine, Milwaukee, Sheboygan and Manitowoc, daily at 8 p. m. On and after Monday, March 21st, the company's steamer Atlanta will leave Chicago for Grand Haven and Muskegon tri-weekly, on Mondays, Thursdays, and Saturdays, at 7:30 p. m.

Capt. E. G. Kohnert, last season of the schooner Frank W. Gifford, which foundered on Lake Michigan, has been appointed master of the schooner George J. Boyce. Capt. Kohnert brought out the Boyce in July, 1884, and sailed her the two following seasons. Capt. John Leonard, the late master of the Boyce, had sailed her ten seasons.

The Independent Tug Line towed the steamer Aurora to Bartlett & Frazier's elevator at South Chicago, the

barge Tasmania from South Chicago to Chicago, the steamer Pickands and Miztec to the Iowa elevator, the steamer Germanic to Armour's A. & B. elevator, the steamer Viking and barges Vinland and Emma C. Hutchinson to the Rock Island elevator.

John C. Durgin & Co., lumber dealers, Chicago, sold the wooden steamer J. W. Westcott for J. S. Fay, Jr., a retired Michigan lumberman now residing at Los Angeles, Cal., to a Milwaukee syndicate headed by Wm. E. Fitzgerald, of the Milwaukee Dry Dock Co. The Dyer was built at Milwaukee by Wolf & Davidson, in 1888. Her length is about 228 feet, beam 36 feet. She measures 1,372 tons gross and 1,086 tons net.

Grand Captain J. S. Van Keuren, of the American Association of Masters and Pilots, arrived in Chicago on Monday to visit the members of Chicago Lodge, No. 33, several of whom attended at the railroad depot to welcome him to Chicago and their lodge. Sessions at which important business was transacted were held at their hall at the Le Grand Hotel on Monday and Tuesday. The members gave a banquet in honor of their distinguished guest, when many excellent speeches and toasts were given and responded to, and a very pleasant evening was enjoyed by those present.

## BUFFALO.

*Special Correspondence to The Marine Record.*

The engineers have been ordered to Erie to fit out the line boats Susquehanna, Codorus, Clarion, Schuylkill and Conemaugh.

Capt. George E. Talbot will take charge of the St. Joseph, owned by W. C. Blodgett, of this port, and J. A. Braman has been engaged as the engineer.

The managers of the line boats here are figuring on starting their fleets April 16th. As the date falls on a Saturday it is an appropriate start as it will "save the Sabbath".

The steamer George T. Hope and her consort J. C. Fitzpatrick load coal here this week. The large steel steamer Zenith City will leave here and dry dock at Lorain for survey.

The Toledo, St. Louis & Kansas City Railway (Clover Leaf Line of steamers) chartered the steamers Blanchard and F. & P. M. No. 8, this week, for service between Toledo and Buffalo.

The first vessel to be docked in the enlarged Union dry dock was the steamer S. S. Curry. A survey was made by Capt. J. H. Kelleran and G. H. McLeod, and it was found that about 20 of her shell plates had to be taken off on account of bottom damage.

The Mills dry dock is quite busy again this week. The tug Kelderhous was given a new screw, calked, overhauled, and had main shaft relined. A scow owned by Frank Williams & Co. was calked, and the steamer Arabia was given a new spar. Other repair work is booked ahead, and there is a general spring-like briskness around the dock.

It is now known that Mr. J. C. Fitzpatrick will succeed Mr. H. C. Hyde this season as agent of the Clover Leaf Line at this port. Mr. Hyde has resigned on account of impaired health. The new agent has the good will and best wishes of a large circle of marine friends, and it is considered that the Clover Leaf Line has secured a valuable representative in the person of Mr. Fitzpatrick.

The inspector for the Lake Erie light-house district has headquarters here, and any changes which are to be made in keepers of the various stations have not yet been announced. None will occur except to fill vacancies caused by resignations and deaths. Orders have already been issued to exhibit lights at the shore stations between Cleveland and Detroit, the department having been notified that the D. & C. line will start its boats on Monday next.

The Union Dry Dock Co. has the work well along in enlarging No. 1 dry dock. Supt. Gaskin had some blue prints of the dock struck off, with the large steel steamer S. S. Curry dry in dock, and there looks to be room for another steamer to be placed on the keel blocks ahead of her. The "Union" people realized that Buffalo ought to have a dry dock to accommodate anything afloat on the lakes, and they will soon have a dock that will take in the longest and heaviest craft that will be built for some years to come. Much credit is due Supt. Gaskin for the unremitting attention he has given to the work on the enlarged dock and his well placed energy in advancing each stage of the new construction.

There is any quantity of excitement on the elevator question this week, but W. J. Connors will eventually "rule the roost." The situation as summed up by Mr. Connors is as follows: "I have a contract with every boat owner to unload his boat at \$2.95 per 1,000 bushels of grain. Of that \$2.95 I have planned to pay the men \$1.85 per 1,000 bushels, the same as last year; to pay \$1 per 1,000 for the steam shovels and to keep 10 cents myself. Now, if I do not unload a boat I will be paid for it just the same, for I have my contract with the owners, and I am ready to fulfill it. As I understand about the steam shovels, they are controlled by each elevator for itself. I can afford to pay \$1 per 1,000 bushels for the steam shovel rights. If I cannot get the rights at that price,



then the boats will be unloaded with hand shovels. Where the men use hand shovels and steam shovels are not used, I will pay the men \$2.85 per 1,000 bushels." In the meantime, James Kennedy, who formerly held the season contract for discharging grain cargoes, has an agreement in force with the elevators regarding the use of nearly all the steam shovels.

George M. Campbell, recording secretary M. E. B. A. No. 1, joined the ranks of the benedicts a few weeks ago in a rather not exactly surreptitious manner, but in a decently private, quiet sort of a way, without letting his associates into the secret. Noticing his change of habits and customs, and his presence being marked by his frequent absence from his usual haunts, an investigating committee, after considerable shadowing, tracked or trailed George to a neat little cottage, built for two, on the West Side, and the mystery was explored and exploded. That manager of the Western Transit Line ain't got no sympathy. George had to fly the coop, so to speak, Sunday night, with a wilted shirt bosom, and, oh, p'raps he wasn't despondent, or anything like that. Oh, no, it was all a mistake. However, he will have time to ruminate on wives and sweethearts and such things while he is fitting out the Commodore's engines in Chicago creek. Guess the coffee mill won't grind fast enough or the old screw churn the liquid a bit too white for George on the down trip; anyway, she won't lose a foot of ground on the second engineer's watch, that's dead certain. Then for the meeting \* \* \* but we draw the veil, as the parsons say.

## CLEVELAND.

*Special Correspondence to The Marine Record.*

Capt. John Mitchell has returned from his California tour.

Mr. B. Boutelle, vessel owner of Bay City, visited Cleveland on Monday.

The engineers of the steamers managed by Pickands, Mather & Co. have started to work fitting out.

The Wilson Transit Line steamer Olympia is undergoing a thorough overhauling at the yards of the Ship Owners' Dry Dock Co.

The schooner George H. Warmington is in the Cleveland dry dock, being searched up and butts calked. Work on her will likely be finished on Friday.

Alex. Laird, junior member of the firm of Laird & Son, ship carpenters, and a prominent young business man of Ashtabula Harbor, died Thursday night last.

Considerable work is being done on the Mutual and Menominee Line boats. Engineers have been put to work getting ready for an early start.

The Cleveland Ship Building Co. are laying the ways for another set of keel blocks at their new yards in Lorain. The dry dock is kept very busy all the time.

The inquiry from your Sheboygan correspondent asking whether the Norman was loaded or light when sunk by collision in Lake Huron. She was bound up, light.

Capt. W. C. Richardson is improving steadily, and he will be around at business again in short order. Much sympathy has been expressed for him during his rather critical illness.

About April 15 seems to be the present idea of starting navigation at this port, but as soon as the Straits of Mackinac are open vessels will be pushed out of port, east and west.

Capt. John Carse, of Erie, died on Monday, at this port. Capt. Carse was at one time worth \$100,000, and was the first man to attempt submarine blasting in this vicinity, with powder.

The steamers J. S. Fay, Superior and Sarah E. Sheldon, of the Bradley fleet, are loading coal cargoes at Toledo. The steamer C. H. Bradley and consorts Mary Woolson and Brightie load at Ashtabula.

The naval reserve corps at this port regret the necessity of Lieut. Stafford being detailed for duty on the Columbia. He was just about to initiate naval drills and otherwise instruct the corps in naval tactics.

With the addition of the Lorain works of the Cleveland Ship Building Co., Cleveland has now practically three large dry dock plants, with every facility to take care of any class of tonnage that can float on Lake Erie. Less than a decade ago one small dock accommodated all comers and had a little spare time occasionally at that.

The Milwaukee Evening Wisconsin says the fact that Mr. Robert Logan, of Cleveland, has been intrusted with the preparations of the plans for the new car ferry steamer for the Toledo & Ann Arbor Railway Co. may be accepted as a guarantee that she is intended to be not only a handsome but a substantial craft.

In the suit against the owners of the Colgate Hoyt, in which the latter is alleged to have run into the City of Genoa, owned by the plaintiff, Judge Ricks on Saturday last decided that the accident was due to negligence on the part of the captain of the Hoyt. The collision occurred at Ashtabula on June 8, 1894.

Mr. Frank Kirby, consulting engineer of the Detroit Dry Dock Co., inspected the new dry dock and works of the Cleveland Ship Building Co., at Lorain, O., on Tuesday. Mr. Kirby had nothing but congratulatory expres-

sions to enunciate regarding the modern machinery and general efficiency of the large new plant recently placed in working order.

Numbers of young men have been tramping and going by train to Erie, Pa., during the past week, looking for a chance to join the navy by applying to the gunboat stationed there. As regards seamen, the rate runs from able seamen to seamen, landsmen and apprentices. Marines are used chiefly for guard duty, and are in a great measure the policemen of the ship or service.

The committee appointed at the annual meeting of the Lake Carriers' Association to endeavor to secure a reduction in the charges for discharging ore at Lake Erie ports asked the dock managers to reduce the rate a cent a ton. The rate for 1897 was 14 cents a ton, and the committee asked that the work be done this year for 13 cents. While the dock managers have taken the matter under consideration it is doubtful if the reduction can be made, as the cent per ton would, it appears, be taken off the men's wages. The discharging machinery and the dock space is now considered as low as it is possible to make any paying rate. The committee is an energetic and aggressive one and if any reduction can be brought about without working an injury to labor it will no doubt be eventually accomplished.

## PORT HURON.

*Special Correspondence to The Marine Record.*

Coal men say that it will be several weeks before they will be ready to talk freights.

Smith Bros., successors to A. H. Scofield in the Tunnel City Boiler Co., have all the work they can do at present.

They have begun to fit out the fleet laid up here. Some will be gotten ready and then lay off the crews until orders come to leave.

Although the car ferry steamer Pere Marquette is making an average of nearly two trips daily between Manitowoc and Ludington, there are still side-tracked 100 east bound and 300 west bound cars.

Capt. Wm. Curtis met with a peculiar and painful accident this week, while cutting kindling wood. He was holding a stick of wood in his left hand and an axe in the right hand. The stick of wood slipped and the axe struck the fingers of his left hand, inflicting a severe gash.

Frank H. Danger, local inspector of hulls, and Frank Van Liew, inspector of boilers, are anxiously waiting for the report of the civil service commission. Both of these gentlemen were compelled about two weeks ago to undergo a severe civil service examination, and are anxious to find out whether they passed or not.

Captain Charles W. Black, left Port Huron, Thursday morning, March 10, for Bermuda, for the benefit of his health. He was master of the steamer Simon Langell last year, but was compelled to resign at the time he was about ready to fit out. It is hoped he will soon be able to take charge of his boat again.

St. Clair river is clear of ice nearly to Algonac. A few days ago there was considerable ice running in the river, and the ferry company were on the lookout for the breaking of the bridge at the foot of Lake Huron. When the bridge gives way it is probable that the river will be filled with ice for some time. The steamer Mary has begun running.

With a very heavy rain for 18 hours, Black river went on the rampage. The water was six feet higher than usual, filling cellars and causing a great deal of trouble. The pile driver that was at work on the new Elmwood street bridge broke away, drifted down and hit the G. T. R. bridge, then capsized and sunk. The schooner Stone, laying at the Fiber Works, had a close call after breaking away. In trying to stop her, she parted her lines and pulled out timber heads, but she was held finally. If the rain had continued, the loss would have been much greater to Port Huron.

For some time past a deal for the sale of the steamer Unique has been on, and the result of negotiations will in all probability be that the fast and trim little steamer will be taken away from Sarnia and placed on a route on Lake Ontario between Toronto and Port Dalmousie. Mr. Slight, the gentleman who is negotiating for the purchase of the steamer, was in Port Huron this week, and it is understood that details regarding the transfer of the steamer are about complete. If the company of which Mr. Slight is the representative succeed in getting the boat, she will be repainted and thoroughly overhauled before leaving Sarnia, and as soon as she becomes a Canadian boat her name will be changed to the "Maple Leaf." It is understood that the purchase price is \$25,000.

## FLOTSAM, JETSAM AND LAGAN.

The steamer E. G. Maxwell has resumed her trips between Pentwater and Ludington.

B. B. Brown, of Pennsylvania, has been confirmed by the Senate as collector of customs at Erie, Pa.

A London dispatch says Sir Henry Bessemer, the celebrated inventor of Bessemer steel, died on Tuesday evening.

The latest figures from Chicago show ten million bushels of grain now afloat and twenty-eight million bushels still in the elevators at that port.

Capt. John Dennesen, founder of the Dennesen line of steamers, died on Tuesday at Green Bay, Wis., aged 86 years. He was a pioneer shipbuilder.

The steamer Simon Langell, owned by Alex. Sinclair, will be in charge of Capt. Chas. W. Black, and her consort, the Arenac, in charge of Capt. William F. Hornig.

Grand Traverse Bay is practically free from ice. Navigation will be formally opened Thursday when the steamer Crescent will come out of her winter quarters at Charlevoix and begin making her daily trips to Bay points as far as Northport.

Pawling & Harnischfeger, Milwaukee, have finished an electric crane for the Midvale Steel Co., Philadelphia, being one of five for this company. The crane just finished is a 40-ton, double trolley, five-motor traveling crane, to be used in the oil tempering plant.

Transactions already closed for Bessemer ores tend to confirm the opinion that the year will be the most active in the history of the Lake Superior mining industries. Preparations are being made on all hands for shipments of ore just as soon as weather will permit.

Admiral Henry Keppel, of the British navy, is still deeply engaged upon the preparation of his book, which is to be entitled "Reminiscences of an Old Sailor." The gallant admiral intends to narrate his experiences of sea life when the "wooden walls of old England" were still the bulwark of defense.

Captain William H. Moore, of Port Clinton, who was in the steamer Maud Preston last season, is to have charge of the Howell fishery at Toledo this year. The Preston, it is reported, may be sold to Toledo parties and converted into a sand sucker. The steamer was on the Johnson's Island route last year.

There can no longer be a doubt concerning the outcome of a war with Spain if the Dons decide to knock that chip off Uncle Sam's shoulder. Steve Brodie, the bridge jumper, his issued an open letter in which he says: "We've got to lick them dubs. I raised 400 men in an afternoon on the Bowery for Coxe's army, and I can do it again." That ought to settle it.—Chicago Times-Herald.

David Vance & Co., Milwaukee, acting for the Thomas Davidson estate, has sold the steamer George H. Dyer to William E. Fitzgerald, who is supposed to represent the Soo line in the deal. The price is conceded to be a fair one in the present condition of the vessel business. The Dyer has been chartered by the Soo line for several seasons, and undoubtedly is one of the best all around business boats for general cargo trade on the lakes.

The Ashtabula Chamber of Commerce sent a delegation this week to consult with F. W. Wheeler & Co., regarding the proposed location of a branch drydock and shipyard on the south shore of Lake Erie. Mr. Wheeler, president of the company, informed them that he wanted to build a drydock equipped to do repair work, and a shipyard in connection for building medium sized wooden boats. About 400 men would be employed. At the West Bay City plant two steel barges and a steamer are in course of construction and 900 men are employed.

Mr. A. T. Thacher and Mr. O. H. Shirley, Toledo, have been associated to carry on the business of submarine diving and consulting marine engineers, to take the place of the old firm of Thacher & Breyman. Mr. Thacher is a son of the late Horace Thacher, and inherits the talent of his father to a great degree. Mr. Shirley has been with Thacher & Breyman as submarine diver for a length of time. The new firm is well fitted and equipped to carry on the business of the late firm of Thacher & Breyman.

Soldiers, sailors and engine drivers want to term their calling a profession, and perhaps it is, in a limited sense, or rather, some portions of it, that portion principally which they don't know, and, are in a measure, unwilling to understand. Now house-wives aver that the proper method of keeping house is a profession, a science, and should be dignified as such. Let's call all labor and each trade a profession, classifying the occupation only as manual, technical and scientific, so might even the tonsorial artist become a professional hair despoiler, having degrees of proficiency according to the significance of the alphabetical grading on his sheep-skin as duly authorized by a college of professional snippers.

## TREASURY DECISION RELATING TO MARINE INTERESTS.

FRACTIONS OF TONS OF VESSELS NOT TO BE REPORTED.

TREASURY DEPARTMENT,  
BUREAU OF NAVIGATION,  
WASHINGTON, D. C., March 7, 1898.

*To Collectors of Customs and Others:*

Article 68 and the succeeding articles of chapter 1 of the Regulations of 1892 are hereby so amended as not to require customs officers to report to the Bureau of Navigation, or to insert in marine documents, or to mark upon the main beams of vessels, any fraction of a ton, gross or net, the capacity of vessels admeasured. Thus, if the capacity of a vessel is either 500.60 or 500.25 tons, it will be reported as 500 tons.

These instructions will take effect on and after July 1, 1898. EUGENE T. CHAMBERLAIN, Commissioner.

Approved:

O. L. SPAULDING, Assistant Secretary.



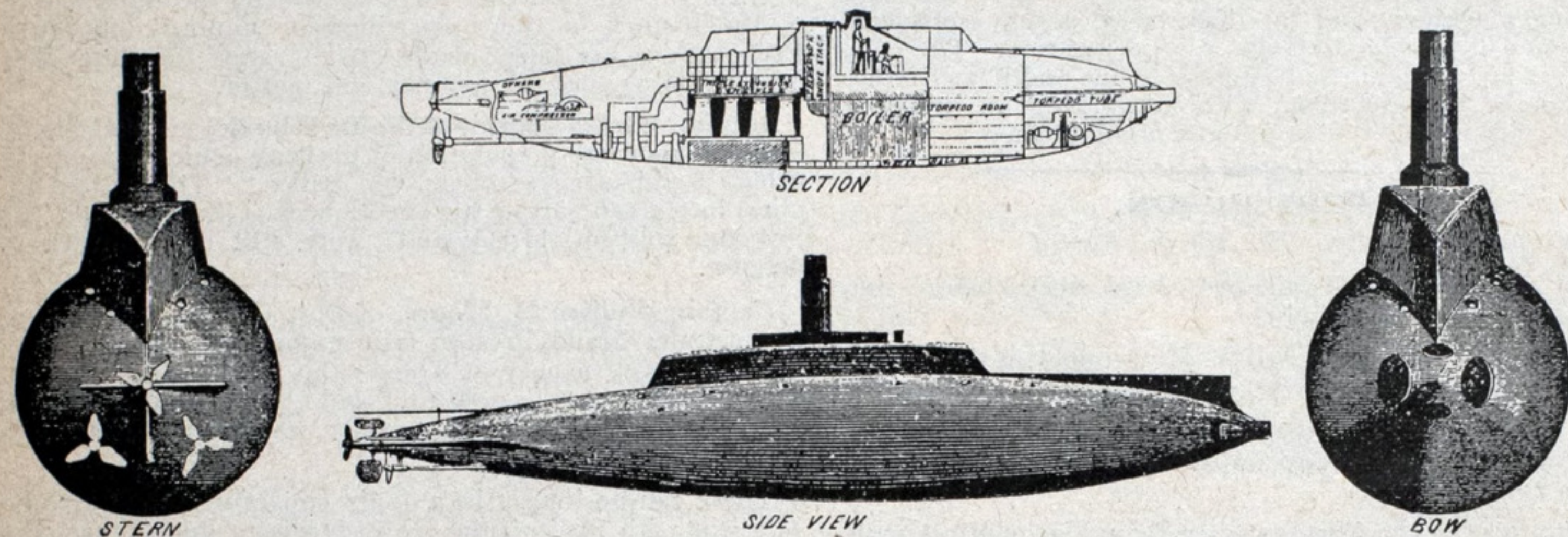
### THE HOLLAND SUBMARINE TORPEDO BOAT.

We illustrated last week a surface working torpedo boat of the second class. The Holland submarine torpedo boat has been tested this week, and, while the boat was not submerged, she otherwise came up to the expectations of her inventor.

Mr. Holland, the inventor, is a native of Ireland, but a citizen of the United States and has been working on his idea of a submarine boat for upwards of twenty years, having built his first craft in 1877. It is expected that the Holland torpedo boat can be submerged eight to ten fathoms, and while maintaining a six-knot speed, fire torpedoes at the same time. If this can be accomplished the success of the boat will be conceded by all parties and the Navy Department

The five Brown machines have been in successful operation during the season, and at the Hocking Valley dock in Toledo the record has been made of 4,700 tons in 12 hours, 200 tons of which was fuel and handled with one bucket. Another record is given of 337 tons per hour. The guarantee on these machines was for 300 tons per hour. During the season the Thornburg machine built by the Webster, Camp & Lane Machine Company, of Akron, O., has been put in operation at Sandusky, and has loaded all the coal reaching that port by the Columbus, Sandusky & Hocking railroad. It is a side dumping machine, taking the car from the dock level and elevating it and dumping onto a pan fenced by a spout to the boat.

This firm has now the contract for building a machine on the Buffalo dock of the Buffalo, Rochester & Pittsburgh railroad which introduces some new features.



THE HOLLAND SUBMARINE TORPEDO BOAT.

Named "The Plunger." She was built at Baltimore, Md., and cost \$150,000. Her displacement is 168 tons and her speed 8 knots. She only carries torpedoes and is an experiment in submarine warfare.

will take over the work of constructing other and similar boats. An extended description of this torpedo boat and her machinery, methods of submergence, flotation, etc., was given in the MARINE RECORD No. 35, Vol. XIX.

### PROGRESS WITH COAL CAR UNLOADERS IN 1897.

From a paper read by W. B. Hanlon, before the Ohio Institute of Mining Engineers, at Columbus, Ohio, January 19-21, 1898.

To the members and friends of the institute who failed to avail themselves of the pleasures and benefit of the summer meeting of the institute, held June, 1897, these few remarks may not be as interesting as they might have been.

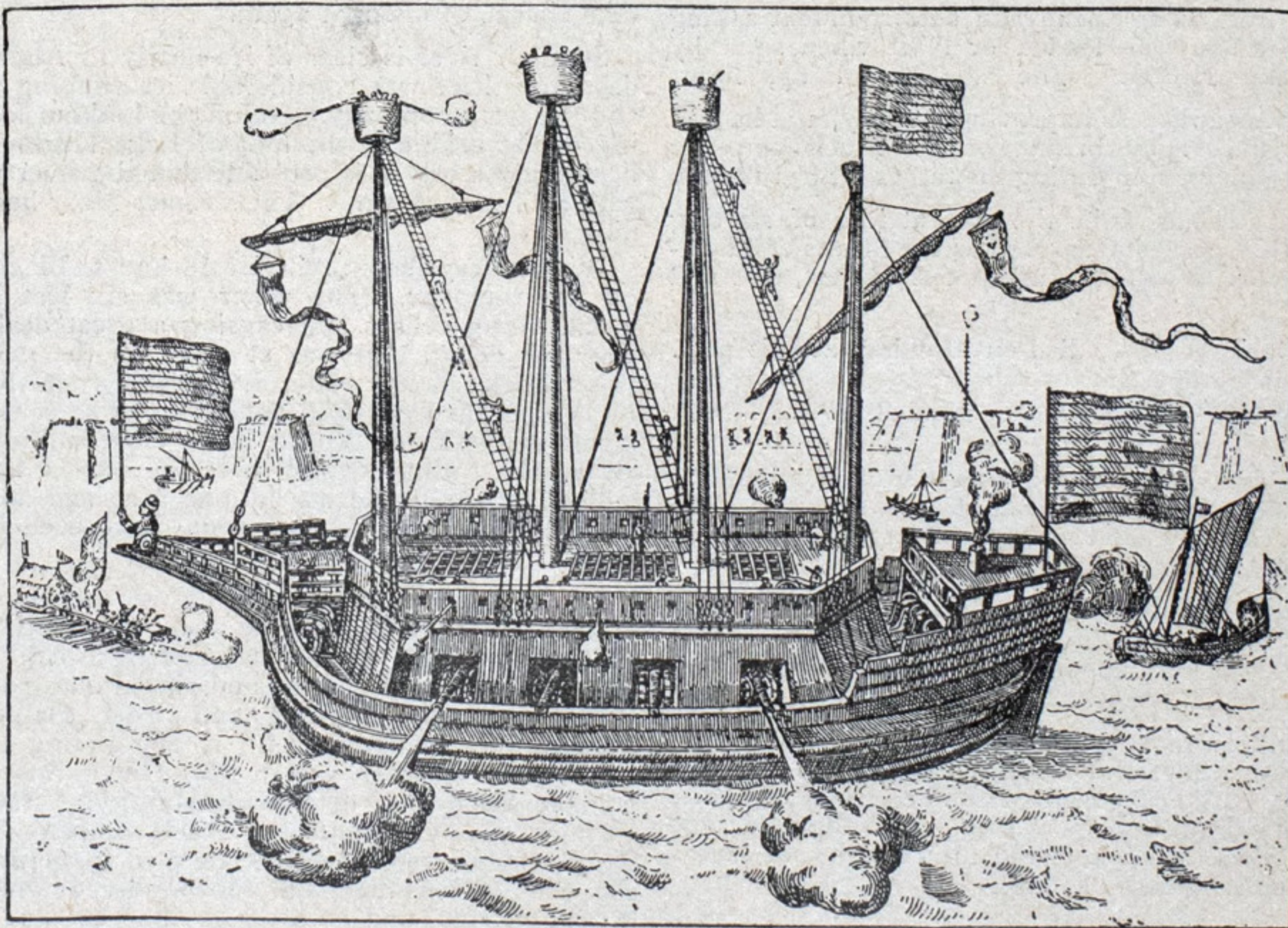
Unfortunately the coal strike of the season caused some of the lake car unloaders to be idle and hence the good and bad qualities of some of the machines could not be observed. During the season the Lindsey machine on the C., C. & S. dock, at Cleveland, has been abandoned and removed. The next machine described in my former paper, the Long, is still in successful operation on the Erie dock, and is admitted by all designers of unloaders to not have an equal for rapidity and minimum cost of operation and maintenance. During the season of 1896 it unloaded 556,000 tons, and in 1897, 508,000 tons the decrease being caused by the coal strike of that year.

The McMyler end dumps at Ashtabula and Fairport are still maintaining their record of satisfactory service. I have no late report of speed but the former report gave 465 tons per minute. The McMyler side dump on the Cuddy-Mullen dock, at Cleveland, has loaded in a very satisfactory manner about 500,000 tons during the season.

A machine of the same pattern has been built on the B. & O. dock during the season, but with a bucket attachment on the end of the apron, instead of a spout, but it has not given entire satisfaction, and on a duplicate machine built at Erie during the season, the bucket has been replaced by a telescope chute.

The latest design of the McMyler machine for which contracts have been given for one at Conneaut and one at Lorain, provides for using the same cradle as in the former pattern, but instead of hoisting the cradle and car to the proper height to dump into the pan, the hinged side of the cradle is stationary, and the over-turning movement is the same as before, but empties into a large pan 40 ft. in length, with a capacity of 40 tons. This pan has one sloping side and ends and concentrates the coal towards a door in the center of the opposite side from the car. When the pan is in a position for being loaded, it is a quarter turned, and the sloping side serves as an apron for the coal to pass from the car. As the pan fills, the opposite side is lowered until it is in a vertical position, allowing the entire contents of the car to be discharged. The cradle is then turned back and the pan is hoisted by four cables to the necessary height to discharge into a telescope chute. By this plant a saving of about 38 to 40 tons of weight to be hoisted is made, and the cars can be shifted while the pan is being emptied, thus saving time and power.

The cradle is the same pattern as the McMyler, but instead of using a pan, two large drop bottom buckets of 23 tons capacity each are used and each receives a portion of the load dumped. The bottom of the bucket is so arranged that when ready to fill, the bottom is near the top and as the coal enters upon it, it descends to the bottom, thus giving no fall to the coal. The buckets are conveyed from that position to the boat by an overhead crane. This firm is introducing into the northwest a device for unloading from the vessels to stock piles, in which the speed of unloading and breakage is very much reduced. It is a bucket of the clam-shell pattern so arranged that when open to receive its load it has an opening



A MEDÆVAL IRON-CLAD, A. D., 1585.

of 12 ft. and a capacity of two tons.

It is a debated question whether the condition of the coal when it reaches the northwest is much taken into account, and it is rather the rule for vessel owners to seek the port where they can be loaded with the least delay, regardless of a slight percentage of breakage by the different machines.

During the season of 1897 perhaps 80 per cent. of the lake coal was loaded after October 1, and without the use of the rapid car unloaders, the amount shipped could not have been handled by the lake. By June 1, 1898, every Lake Erie port will have from one to four unloaders.

the use of multiple cylinder engines, steam jacketing, higher steam pressure, and superheating the steam. Five per cent. is due to the use of vertical engines, seven per cent. to improved boilers, seven per cent. to economy realized in heating the feed water, and two per cent. is put down to the credit of improved construction of grates. Taking the best performances of the two periods named, the least consumption of steam per horse-power per hour in 1870 was twenty lbs., whereas the best for 1897 was twelve and a half lbs.

### EASTERN FREIGHT REPORT.

Messrs. Funch, Edye & Co., New York, report the eastern freight market as follows: Grain freights by steam have been well maintained and prompt boats for Cork f. o. have have secured up to 3s. 7½d., with the Danish options at equivalent figure. April tonnage from the Range is worth from 3s. 4½d. @ 3s. 6d., and a couple of fixtures are reported for May loading at 3s. 3d. Large boats for berth business are readily obtainable for March-April loading at 3s. 3d. @ 4½d. as to ports, with the privilege of general cargo for from one-third to one-half of vessel's capacity. At the time of writing the demand has slackened off, and it appears that the pressing requirement for tonnage is momentarily satisfied. There is some demand for boats on time, charter and for special business, which hang fire, however, as owners' figures at the moment are beyond shippers' views, and, the enquiry not being pressing, the latter wait. The demand from the Atlantic cotton ports is very feeble, and practically none for steam room for case oil. Some boats for timber could doubtless be placed at some concession from owners' asking rates, but the demand is not in an acute state, and charterers cannot yet be induced to grant rates placed before them.

Our market for sail tonnage continues very firm, but without important fluctuations in rates. The only change we might mention is in lumber freights from the east to River Plate, which have improved about 50 cents per mille, \$8.50 having been paid from this port to Buenos Ayres. There is still quite a demand for lumber vessels from the Gulf to South America, but, on account of the scarcity of sail tonnage, shippers are forced to look for steamers, a couple of which have been fixed of late. The enquiry for timber bottoms from the Gulf to Europe continues active, but a few charters only have latterly been made in this line. General cargo vessels on the spot have been able to obtain fair business for the colonies, but "to arrive" for April-June loading, rates still hold at about 17s 6d. @ 18s. Case oil freights remain exceedingly firm at former rates, but only few fixtures can be reported this week.

One of the best papers recently read before the American Society of Mechanical Engineers was presented by Mr. F. W. Dean, on the decrease in the cost of steam power between the years 1870 and 1897. This was shown to amount to nearly forty per cent.; seventeen per cent. of this is attributed to



**U. S. TRIPLE-SCREW CRUISER COLUMBIA.**

Naval officers assigned to detail of hydrographic work have become somewhat prominent of late, as for instance Captain Sigsbee of the late battleship Maine who was, previous to his assignment as captain of the Maine, the Chief Hydrographer U. S. N.; also Commander Geo. P. Blow who was detailed to the initiative work of establishing branch hydrographic offices on the lakes and later as an officer of the ill fated Maine.

In this connection Lieut. George H. Stafford, U. S. N., in charge of the branch hydrographic office at Cleveland has this week been ordered to report for duty on the U. S. cruiser Columbia (herewith illustrated).

Lieut. Stafford entered the Annapolis naval academy in 1874 and graduated in 1878. He is now forty-two years of age. Immediately after his graduation, from 1878 to 1885, he served on the Tuscarora and the Ranger, being on what is known as "serving duty" in the Pacific, Mexican and Central American coasts. From 1885 to 1887 he was on duty in the office of naval intelligence at Washington, and from 1887 to 1890 was again on the Ranger off the coast of California. From December, 1890, to December, 1892, he was on the Michigan on Lake Erie, and in 1893 he joined the Baltimore, which was the flagship of the squadron on the Asiatic station. He was on the Asiatic station for three years, returning on the Charleston to San Francisco and being assigned to duty in the branch hydrographic office at Cleveland shortly afterward.

The protected cruiser Columbia made her famous trial trip across the Atlantic in 1894. Her trial speed was 22.8 knots. Her displacement 7,375 tons. She has an armament in her main battery of one eight-inch rifle, two six-inch rifles and eight four-inch rapid fire guns. In her secondary battery she has other guns. The Columbia is a protected cruiser, which means practically that she has no side armor, the protection of magazines and machinery being by an armor deck. This consists of inclined portions at the sides, running from about 4½ feet below the water-line at the sides to about a foot above where they join the horizontal central portion. The inclination is about 30 degrees. The inclined sides are four inches thick and the central part about 2½ inches thick.

As the function of the Columbia is to act as a commerce destroyer, she was so designed as to bear some resemblance at a distance to an ordinary high classed merchant steamer, thus enabling her to get well within range before her true character was discovered although in a long chase she could overhaul almost any vessel afloat on account of her superior steaming qualities. Her principal dimensions are 412 feet in length, 38 feet beam and at 22.5 feet draught, on a displacement of 7,400 tons.

On the official trial trip the Columbia's speed was 22.8 knots per hour for four hours (equal to about 26¼ statute miles), the highest accurate speed ever attained by any naval vessel up to that time. The steam pressure in the boilers was 147 pounds and the revolutions of the three screws 134, 127.7 and 132.9 per minute for the starboard, central and port screws, respectively. The temperature in the engine rooms averaged 85 degrees and in the fire rooms 106 degrees. The horse power of the main engines and auxiliaries was 18,500. On the trial trip the speed was also measured by two patent logs of the best type, and the mean of their readings gave an hourly speed of 24.34 knots. Patent logs do not always give accurate results, but the record still has a value because the speeds of British war vessels, with which our own are frequently compared are generally obtained in

that way, so that in such comparisons the Columbia's speed should be taken as 24.34 knots and this figure is above the record of other large steamers.

**A NATIONAL PROBLEM.**

The London Shipping Gazette says: The practical disappearance of the Stars and Stripes from the world's ocean commerce is unquestionably one of the most singular features of the maritime history of the century. A nation which possesses magnificent stretches of seaboard, which has exhibited unprecedented internal development, which produces excellent seamen, and which is inherently capable of building as many ships as she needs, has, for some reason or other, been content to allow her foreign-going merchant marine to fall into a neglected and inglorious condition. Her coasting and inland navigation is conducted under circumstances which in certain respects excite pride and even envy, yet when it is a question of undertaking the transport to foreign shores of that export trade which is the wealth of the country an American ship is rarely available. The common explanation of this phenomenon is that the United States lost her merchant fleet during the civil war and that she has never been able to regain it. But can it fairly be said that that war has been actively operating during all the remaining years of this century and bids fair to make its influence

length of the canals in India for irrigating 8,000,000 acres is calculated at 14,000 miles. The Canal du Midi, connecting the Atlantic with the Mediterranean, is 148 miles long. The Caledonian canal in Scotland has a length of 60 miles. The Suez canal is 88 miles long, and the Erie, 360; the Ohio canal 332; the Miami and Erie, 374; the Manchester ship canal 35½ miles.

An American naval constructor has prepared an article, showing that no vessel is built strongly enough to withstand the ramming of a swift, strong vessel of about 125 feet in length. Used as a ram a boat of this type would prove most effective. The entire weight multiplied by her momentum would be delivered on one spot. Obviously the damage would be great. The statement that the Devastation, one of the most heavily armored ships in the world, would be at the mercy of these small craft is significant, but Spain does not possess boats of the Devastation type.

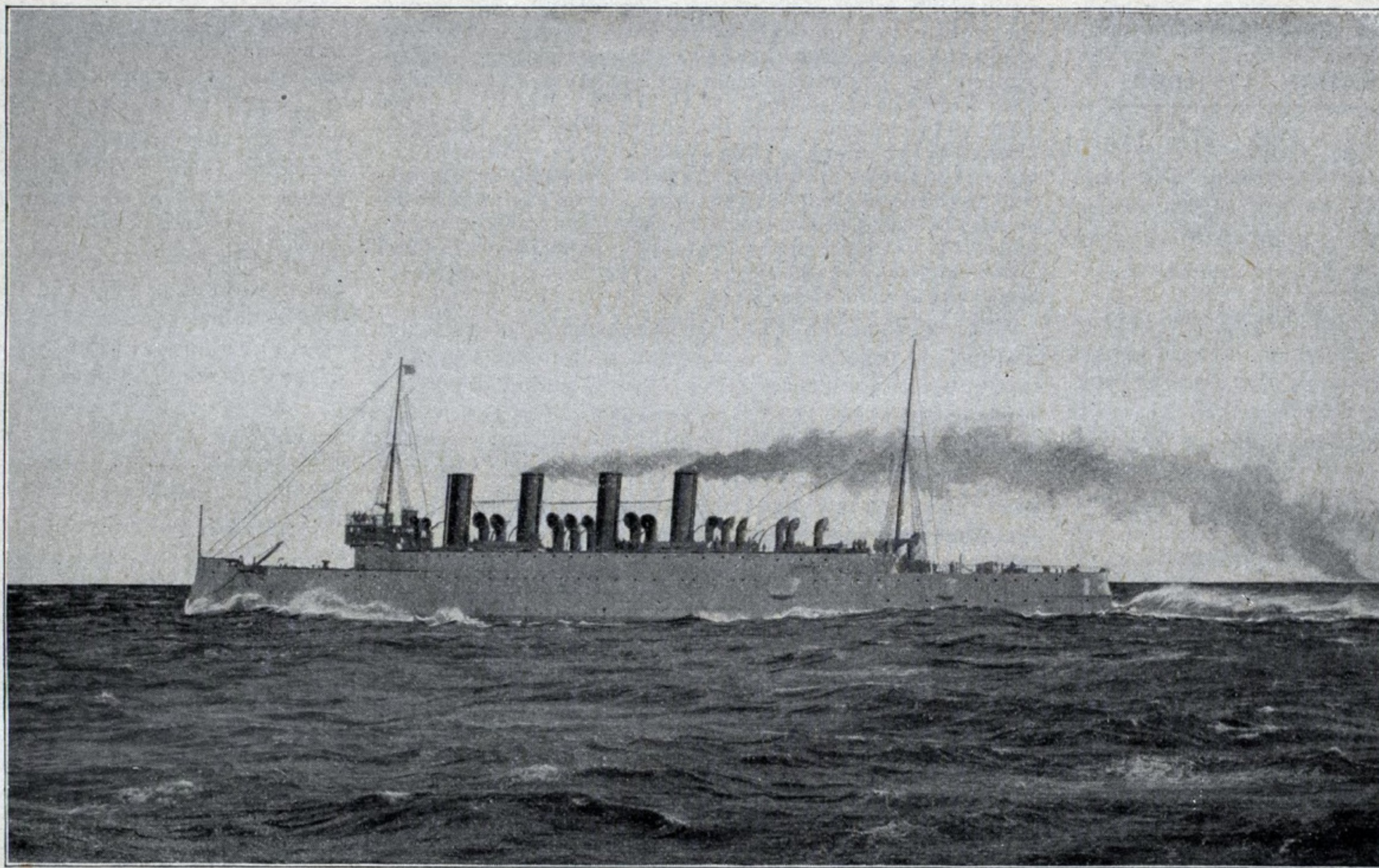
**BUFFALO BREAKWATER.**

As soon as the weather permits, work will be started on an extension of the Buffalo breakwater, under the supervision of Maj. Thomas W. Symons of the U. S. engineer corps. The existing breakwater, completed in 1894, is 7,600 ft. long, to which there will be added 12,500 ft. of new construction, making a total length of 20,100 ft., or very nearly 4 miles.

When completed the breakwater will extend from the lighthouse to Stony Point and it will be the longest work of the kind ever constructed. The nearest approach to it is the breakwater at Cherbourg, France, which is 12,200 ft. in length. Continuing from the present structure, 5,000 ft. of the new construction will be what is known as a "rubble mound" breakwater. This construction consists of a hearting or cone of gravel, or other good material, covered with ordinary rubble stone, surmounted by a superstructure of large capping stones weighing from three to ten tons or more each. The gravel core will have a base of about 100 ft., and a general height above the lake bottom of about 26 ft. It will be covered on its lake and harbor sides and over its top with about 4 ft. of rubble stones, weighing from 25 to 300 lbs. each. The capping

stones will extend to a height of 10 ft. above mean lake level and have a width of 15 ft. on top. The remaining 7,500 ft. between the end of the rubble mound breakwater and Stony Point will be a crib of hemlock and white pine timber 36 ft. wide and 22 ft. high, filled with stone. As the bottom of the lake over which this class of construction will extend is of soft mud, it will be necessary to dredge out a trench about 50 ft. wide, which will be filled with gravel for a foundation of the crib work. The depth of water along the line of the proposed structure ranges from 26 to 31 ft., the mean depth being 30 ft.

CASSIER'S Magazine for March has an interesting and exhaustive article, extensively illustrated, by Lewis Nixon, of the Crescent Shipyard, Elizabethport, on "The Building of a Ship;" also an interesting discussion by H. W. Spangler, of the question: "Can Coke be used as a Smokeless Fuel?" "The American Naval Officer of the Future" is set forth by Walter M. McFarland, P.A.E., U.S.N., as "a fighting engineer," and there are number of other interesting and useful presentations by practical authorities on the lines upon which this magazine has so successfully established its reputation.



U. S. S. "COLUMBIA" AT FULL SPEED.

felt even in the next? In other words, if the foreign shipping of a nation once receives a severe and even a disastrous check, can it never recover, despite the fact that subsequent conditions seem highly favorable to its revival? This is the problem for American statesmen to solve.

**THE WORLD'S GREAT CANALS.**

A contemporary, treating of the great artificial waterways of the world, has assembled the following statistics relative to canals that have figured prominently in the advancement of civilization.

The Chenab irrigation canal, in the northwest provinces, India, is 200 feet broad. It is doubtless the largest canal in the world. Its main channel is 450 miles long, while the principal branches have an aggregate length of 2,000 miles, and the village branches will extend, when completed, for an additional 4,000 miles. Apart from irrigation, the longest canal in the world is that which extends from the frontier of China to St. Petersburg, and is 4,472 miles in length. Another Russian canal, from Astrachan to St. Petersburg, is 1,434 miles long; both the last named canals were begun by Peter the Great. The Bengal canal, connecting with the River Ganges, completed in 1854, is 900 miles in length, and cost £2,000,000 sterling, or £2,200 per mile. The total





ESTABLISHED 1878.

Published Every Thursday by

THE MARINE RECORD PUBLISHING CO.,  
Incorporated.

GEO. L. SMITH, President.

C. E. RUSKIN,	-	-	-	Manager.
CAPT. JOHN SWAINSON,	-	-	-	Editor.
THOS. WILLIAMS, Chicago,	-	-	-	Associate.

CLEVELAND,  
Western Reserve Building.CHICAGO,  
Royal Insurance Building.

## SUBSCRIPTION.

One Copy, one year, postage paid,	-	-	\$2.00
One Copy, one year, to foreign countries,	-	-	\$3.00

Invariably in advance.

## ADVERTISING.

Rates given on application.

All communications should be addressed to the Cleveland office.  
THE MARINE RECORD PUBLISHING CO.,  
Western Reserve Building, Cleveland, O.

Entered at Cleveland Postoffice as second-class mail matter.

CLEVELAND, O., MARCH 17, 1898.

According to the returns of the Registrar General of Shipping the merchant marine of the United Kingdom shows a decrease in the number for 1897 of 290 vessels; notwithstanding this marked loss in numbers the increase was 8,627 tons gross for the year.

Of the five new dry docks to be built by the government at Portsmouth, N. H.; Boston, Mass.; League Island, near Philadelphia, Pa.; Algiers, near New Orleans, La.; and Mare Island, near San Francisco, Cal., three are to be of wood, such as the docks now in use on the lakes. The Portsmouth dock is likely to be built of stone taken from quarries in the vicinity, and that at Algiers, of steel.

The thanks of the Record are due the office of the U. S. Coast and Geodetic Survey for a chart of the Yukon River and new Klondike territory, plotted according to the latest surveys. Those who intend visiting that region, or have friends there, should obtain copies of this, the first, and only official chart of the now famous Yukon River. Patrons of the Record may order through this office, and we will see that their requests are promptly attended to.

Passenger or cargo steamers, steam yachts, tug boats, and even tow barges, are vaingloriously figured on as capable of carrying and using armament in the event of the United States entering upon a naval war. The best of this class of tonnage, when used, is usually chartered for the transport of troops and taken under convoy, cargo steamers carry supplies, yachts act as dispatch boats and the tugs as tenders, but they are not used as fighting vessels at any stage of an unpleasantness.

The Flint & Pere Marquette R. R. Co., also the Toledo & Ann Arbor R. R. Co., have had plans drawn up for large, powerful railroad car ferry steamers, and it is expected that as soon as the plans and specifications have been thoroughly considered the latter company will act promptly in placing a contract. This expensive and high classed special tonnage is built not only for railroad car ferrying purposes, but also for use as ice crushers to keep open winter communication by water.

Three or four days more and "Old Soleil" will have passed north of the Equator; then we can bid adieu to old Mr. Hardweather for a month of Sundays. There is no denying that "the wind bloweth where it listeth" and the beautiful snow has a habit of precipitating itself in untoward places at unexpected times, all the same, there can't be many blizzards circling around these parallels of latitude, when the sun has a northern declination. To a man up a tree, the season seems to have advanced fully a month ahead of its proper and ordinary course.

## SAILING DIRECTIONS.

The Hydrographic Office has published "Sailing Directions," No. 100, in book form, for the Gulf and River St. Lawrence. As this is the second edition of the work, it has evidently met the approval of the men engaged in using those waters. We are sorry to see, however, in Chapter I, on General Remarks, the following: "The deviation or local attraction of the compass needle is another source of error. This subject is one of great importance in approaching and navigating the Gulf, as from the increase of the magnetic dip and the decrease in the horizontal magnetic force that is found here—two elements affecting the ship's magnetism—the original deviation of the compass will, in all probability, be much increased. In many vessels it has been ascertained by direct observation that their maximum deviation has been increased by one-third." In the foregoing, deviation and attraction, two corrections, resulting from entirely different forces or causes, are merged into and spoken of as being one and the same thing. The "original deviation" is also treated of in a peculiar manner. The sweet darling information for "Sailing Directions," which under the best conditions are frequently puzzlers to navigators anyway, is given in the paragraph on Magnetic Attraction of the Shores—as follows:

"An opinion is prevalent that the compasses of vessels are disturbed in the Gulf and River, and such disturbance has been attributed to the magnetic ores of iron in the hills, particularly those of the North Coast. The magnetic oxide of iron does exist abundantly, and attracts the needle very powerfully at some points, particularly along the coast from the Bay of Seven Islands eastward. Among the Mingan Islands the variation was found to vary from this cause from 19° to 31° W. But these effects were only noticed when the instrument was placed on shore. When running from place to place, at greater distances than two miles from the coast, nothing of the kind was noticed; so that in nine cases out of ten where this source of erroneous reckoning has been alleged as the cause of accidents to vessels, they probably originated either in errors of the chart or in the local attraction on board the vessels themselves."

Here we have deviation, variation and local attraction jumbled up together in a way that is not just according to Gunter, and which calls for a straightening out by the Hydrographer, U. S. N., at present in charge. It may further be noticed that the effect on the magnetic needle is only felt when the compass is placed on shore. That's a pretty good place for a sailor to have it, to be sure, but his efforts are all turned towards keeping himself, vessel and "sea clock" off the beach. So, we are told that two miles off the land there is no attraction; such being the case, we may wonder if the Hydrographer would not let us go a step or two nearer before turning on the extra juice to make the needles wobble erroneously. In nine cases out of ten we are further told, that blaming the compass is no excuse. What about the tenth case? The nine are said to probably originate either in errors of the chart or in the local attraction on board the vessels themselves. Well, considering there is never any local attraction, as such, aboard the vessels themselves, we'll blame the charts, blame them up hill and down dale, if that's going to do any good, but then it don't prevent us from taking a crack at the amateurish and apparently misleading terms indulged in by the compiler of the foregoing "Sailing Directions," whose remarks ought to have been overhauled by some one.

## DRY DOCKS.

As an instance of the more progressive methods of doing business on the lakes, we may point with some degree of pride to the question of adequate dry or graving dock facilities. Shipbuilding and dry dock firms on the coast have permitted naval as well as merchant vessels to frequent their ports, well knowing that they had not the accommodation to "dry" such such bottoms, if, or whenever such a course became necessary. On the contrary, lake shipyards are a decade ahead of all tonnage afloat on these waters, and could easily dry dock the largest battleship yet built. So remiss have the coast firms been in carrying on their business that they have lost large sums of money through their want of enterprise, not to mention the lack of sense, shrewdness or even ordinary gumption in attending to the requirements of the times. Under such conditions it is almost a wonder that the private firms have not been forced out of business. The object lesson given a while ago, when a U. S. ship was compelled to ask the Dominion government for the extension of dry dock courtesies on account of there not being an American coast dock in a condition to "dry" the vessel, was a trifle "off

color," a little humiliating, as it were, and this, too, from a national standpoint, but it ought to have brought a bright blush of lasting shame to the countenances of those who professed to be in the shipbuilding and dry dock business on the coast. Government dry docks ought to be the exception, not the rule. They are only used on special occasions, and the fewer we have the better it is for business, from a citizens' standpoint. The government has now authorized five large docks to be built with the people's money, for national, or naval use, not for commercial purposes, not for business uses, not for dividend earners—although they are a menace to public docks wherever built, and private capital, brains, energy and skill can go begging where a naval dry dock is established. In times of peace each large naval dry dock is a good deal of a "white elephant" on the hands of a nation. In a word, the lack of ordinary business ability among eastern dry dock proprietors has saddled every citizen of the United States (themselves included) with another indirect, though permanent and positive taxation account, which will be scrupulously exacted for the upkeep of immensely expensive and seldom used naval plants.

Ordinary citizens clapped each other on the back, members of Congress, Representatives and Senators, lauded each other to the skies and swore blue streaks of patriotism. The President was generally supposed to consider himself a Croesus, eclipsing the ancient, eastern, effete monarch of Lydia, and all because a trifling fifty million dollars had been voted as a peace measure to prevent war being declared by a nation that is actually and practically, commercially, military and a lot of other "ally's" especially comparatively like the proverbial "dead cock in a pit." All this was considered very glorious and patriotic, but after all it is a good deal like straining at a gnat in attempting to swallow a camel. Spain is no match for this great and glorious republic. Consequently there can be no warfare, the measly fifty million dollars will do all well enough to brush off naval and military cobwebs with and burnish up the ordinary accoutrements a trifle, but the sum as a means of defence don't amount to a row of pins. So it has been well termed, with a unanimous hurrah, a peace fund. The insignificance of the donation, and the fuss and feathers raised regarding it, is borne in upon us in a very striking manner when we find that Great Britain, a couple of rocky islands, that, territorially, could be stowed away in the corner of one of our large western states and not noticed, a place where a person is almost afraid to get aboard a steam car in case the train will either roll or run off into the briny before there is time to start and stop again, a country indeed where they actually try to get off the earth and go under the ocean to mine coal for their manufacturers to burn, and which does a whole lot more curious things, yet does not turn a feather in voting the ordinary sum of \$240,000,000 Army and Navy estimate as a peace fund, \$188,000,000 for the annual upkeep of her navy, \$52,000,000 more to purchase a new set of shoe laces for her infantry and stouter bridles as an extra stand by for the cavalry. Well! We needn't cry until we are hurt, that's all.

Fractions of tons are no longer to be placed on the main beam of vessels and the departure is a sensible one, but, we had considered that when the fraction exceeded the half-ton, measurements would have come out nearer right if one ton was added to the register, when less than half a ton, the fraction to be cancelled. This plan would have been striking an equitable mean, now it appears that if the capacity of a vessel is either 500.60 or 500.25 tons it is to be reported and marked on the fore side of the main beam as usual as 500 tons. The Commissioner of Navigation does not state, however, that 500.99 must in future be called only 500 tons. On and after July 1 this ruling will take effect; in the interval we would like to know what is to be done with that other 39 per cent. not spoken of.

Yes, there are a few fast steam yachts on the lakes, and it has been suggested that they, as well as the whaleback models, be fitted with a steel snout and used as rams. Wonder what the other fellow would be doing while they were approaching to ram, and, if permitted to get so close, where would such tonnage be after the impact? The ram-mee would likely be crippled if she met the attack end on, but the rammer would be placed so hors-de-combat that what was left of her could only be rafted into a scrap pile.

In a St. Louis marine journal we find a display advertisement for the sale of a fast steam yacht, wherein the



advertiser respectfully refers intending purchasers to the U. S. Supervising and Local Inspectors of the Steamboat Inspection Service for the district. This is not as it should be; officers of the U. S. Steamboat Inspection Service have no license to act as vessel brokers or to allow their names to be used in such a connection, or if they have, it is beyond our ken and we could stand instructing regarding the whyness of the wherefore.

#### LAKE FREIGHTS.

There has been little or nothing doing in lake freights during the past week and the situation is not to say promising. When the starvation rate of 65 cents on practically season business from the head of the lakes has been taken, the outlook can not look otherwise than doubtful for fair living rates. The Bessemer and the whaleback fleets are fixed for the season and will lug along, perhaps, with some assistance, about a seventh or eighth of the iron ore output from the head of Lake Superior. For a part of the season 60 cents has been offered and there have been takers. The Illinois Steel Co. will be heavy charterers this season from Escanaba and Lake Superior, though it is not known what figures have been offered them, although options have been made.

A few cargoes of coal, anthracite and bituminous, are already loaded for delivery at Lakes Michigan and Superior ports. Lumber rates are what might be called vacillating, while two newly formed lumber carriers' associations are making endeavors to hold up a tariff rate or profitable lumber carrying schedule.

#### THE DETROIT RIVER BRIDGE.

The Congressional bill for the railroad bridge over Detroit river, which was to have been introduced last week, was presented on Monday by Congressman Corliss. It provides that the Detroit Union Bridge Company, organized under the laws of Michigan, shall be authorized to build a bridge over the river, and the bridge shall be in the city limits; that the plans shall be approved by engineers selected by the War Department, and the bridge shall be for the joint use of all railroads on equal terms; that no increase in charge shall be made for carrying mails or troops than under present conditions; that the bridge shall have not more than three spans between bulk and head lines on both sides of the river, the main channel span to be 1,100 feet in a clear width, the height to be determined by the Secretary of War; that there shall be but two piers inside bulk head lines. It also provides that if the bridge is not begun in three years and completed in six years, the act shall be void.

#### NEW DRY DOCKS GALORE.

With the news that the government has authorized the construction of five dry docks for naval use, it is learned from Newport News, Va., that the Newport News Shipbuilding and Dry Dock Co. will also commence work on a large private dry dock.

Collis P. Huntington, principal owner in the above named firm, will accept no subsidy from the government. He will furnish the \$1,000,000 or more to build the dock. The dock, when completed, will be 900 feet in length and 90 feet in breadth, and will be capable of receiving two of the present largest battleships at one time. It is understood that 1,000 men will be employed at once to push the work to completion.

#### THE ROBERTS WATER TUBE BOILER.

It is a pleasure to learn that one who has plowed the sea for a living for half a lifetime, can sometimes, eventually land with both feet on terra firma and make a commercial success, armed only with technical skill and mechanical ability. Such is the history of the manufacture of the now universally known Roberts Safety Water Tube Boiler. After thirty-six years' experience as a marine engineer, both in the navy and merchant service, and in all kinds of vessels, the inventor of this make of boiler and the present general manager of the company finds himself in a position to announce that they are now building about 40,000 horse-power of Roberts boiler. The works are operated continuously during twenty-four hours per day (Sundays excepted) and he states that orders enough are booked ahead to keep going at this gait until June 1st.

It is noteworthy that a probable 25 per cent. of the present orders are for boats which will navigate the waters of Alaska and the Yukon this summer, therefore out of reach of repair or boiler shops.

The Roberts Co., besides having the largest plant in the world, devoted exclusively to the manufacture of marine water tube boilers, have installed several marine plants of

1,000 to 2,000 horse-power in single vessels and are willing to install up to 10,000 horse-power in a steam vessel without one dollar of payment until the boilers have proved so satisfactory that the purchasers will acknowledge that they can not afford to operate the vessel without Roberts boilers.

#### PATRIOTIC SHIPMASTERS AND PILOTS.

The following resolutions were unanimously adopted at a recent meeting of Harbor 33, of the Masters' and Pilots' Association, of Chicago.

Whereas, Wm. E. Mason, United States Senator of Illinois, has always upheld in the Senate the cause of helpless and suffering Cuba, and has fearlessly and eloquently pleaded for intervention by the United States; and,

Whereas, He has offered a resolution asking that a joint committee from the House and Senate be appointed to investigate the cause of the destruction of the United States battleship Maine, in Havana harbor, whereby so many brave Americans were hurled to instant death; and,

Whereas, He has been criticised for urging the United States government to take a manly and patriotic course in this matter; therefore, be it

Resolved, That Harbor 33 of the Masters' and Pilots' Association, of Chicago, deprecate the conduct of those newspapers and stock jobbers who, for mercenary purposes would have the nation suffer any indignity and our national flag any dishonor, rather than follow a patriotic course which might lead to war; and, be it

Resolved, That we unanimously endorse the course our Senator has pursued, and pledge ourselves to assist him in his manly and patriotic course by all honorable means.

#### MR. CARNEGIE'S LETTER ON A NEW SHIPYARD.

Capt. Alex. McDougall, general manager of the American Steel Barge Co., West Superior, Wis., writes the MARINE RECORD, as follows:

"In regard to Mr. Carnegie's idea of establishing a shipbuilding plant in New York harbor. I have thought of this for a number of years, we having built two vessels there, and I could plainly see the disadvantage of doing business of this character without the force and promptness with which shipbuilding and repair work is done in the lake country, and I think that, if a combination of lake interests would undertake to put in a plant for new construction and repairs of ships on large scale in New York harbor, it would be a very profitable investment, particularly so if the managing sentiment came from practical lake shipbuilders, and if such a plant were established, it would be a great benefit to the country at large, as it would enable us at an earlier date to get the American ship in foreign trade."

Mr. G. N. McMillan, of the Detroit Dry Dock Co., says:

"Referring to Mr. Carnegie's letter on the establishment of a shipyard in the east under lake methods, it occurs to me it would be a grand thing for all concerned could it be carried out with success. There are, however, bright men and enterprising concerns located on the Atlantic, and that lake methods do not exist there may be from causes not apparent, but that nevertheless would have to be overcome. When ship material can be carried from Pittsburgh to New York for \$1 per ton, with reasonable despatch, the time may be ripe for the establishment of a modern up-to-date shipyard that will mark the beginning of more satisfactory conditions in our shipbuilding and the expansion of our ocean commerce. I believe Mr. Carnegie's views will be realized, but whether the success will come in the immediate future or at a more distant day can be only answered by the experiment."

#### A CHICAGO LUMBER CARRIERS ASSOCIATION.

The following circular has been sent out since the last issue of the RECORD.

TO WHOM THIS MAY CONCERN:—At a meeting of vessel owners, both sail and steam, held in Chicago, Friday, March 11, 1898, a permanent organization was formed to be known as the Lumber Carriers' Association.

Its purpose being to establish a minimum rate of freight from all shipping points on Lakes Michigan, Huron and Superior, and destined for Chicago or any other Lake Michigan port, and a schedule of freight rates will be submitted at said meeting for the consideration of the members and its adoption recommended if found satisfactory, the same being a minimum basis to work from, and secure better rates if possible as the exigencies of the times may warrant.

It surely needs no argument to convince all fair minded persons interested in the freighting business that something should be done towards establishing a fair rate for freight, to enable carriers to pay their legitimate running expenses, and we cordially invite all owners and masters of vessels, barges and steamers to attend a meeting of the association to be held in the Shipmasters' Hall over the Le Grand Hotel, corner Wells and Kinzie streets, Chicago, on Friday, March 18, 1898, at 2 o'clock P. M., for the purpose of extending our membership, if possible, and agreeing upon some method or plan to pursue in freight matters for the coming season of navigation. Jas. A. Calbick, President; H. W. Cook, Vice President; F. B. Higgin, Secretary; B. F. Davidson, Chairman Freight Rates.

#### APPOINTMENT OF OFFICERS.

Mr. Edward Buckley, Manistee, Mich.: Steamer—Edward Buckley, master, Chas. Gnewuth; engineer, Richard Winkler.

W. Rice, Port Huron: Steamer—Rhoda Stewart, master, W. E. Rice; engineer, James A. Southgate. Magnet, (barge), master, Elmer Campbell.

Charles Beyschlag, St. Clair: Steamer—P. J. Ralph, master, Henry Leisk; engineer, W. J. Bolton. Harold, (schooner), master, Thomas Leisk.

John Thompson, St. Clair: Steamers—Douglas, master, F. J. Meno; engineer, Jos. Meno. Pilgrim, master, Eugene Hayward; engineer, Porter Robinson.

Thomas Lester, Marine City: Steamer—Tempest No. 1, master, Geo. H. Lester; engineer, Joseph Schnell. Emma L. Coyne, (schooner), master, Henry G. Lester. Uranus, master, J. M. Balfour.

Marine Transit Co., Marine City: Steamers—Toltec, master, James Taylor; engineer, Amos Horton. Aztec, master, J. W. Baby; engineer A. Beauchamp. Zapotec, (schooner), master, P. Thomson. Miztec, (schooner), master, R. Smith.

The Williams Transit Co., South Haven, Mich.: Steamers—City of Kalamazoo, master, David Morris; engineer, A. Krognan. H. W. Williams, master, John Bayne; engineer, Perry Knagg. Glenn, master, Frank Swails, engineer, R. Peterson.

The Marine Transit Co., Marine City Mich., W. S. Roberts, manager: Steamers—Aztec, master, J. W. Baby; engineer, B. Beauchamp. Toltec, master, Jas. Taylor; engineer, Amos Horton. Schooners—Miztec, master, Robert Smith. Zapotec, master, P. Thomson.

The Eddy-Shaw Co., Bay City, Mich.: Steamers—City of Bangor, master, Wm. Cavers; engineer, Henry Annell. Penobscot, master, J. H. Coleman; engineer, S. G. Cowell. Selwyn Eddy, master, T. D. Gibson; engineer, Geo. W. Wilson. E. C. Pope, master, John Burns; engineer, John M. Conroy.

Messrs. C. W. Elphicke & Co., Chicago, Ill.: Steamers—W. R. Lynn, master, John Massey; engineer, M. Toner. Geo. N. Orr, master, Dan Mallory; engineer, L. Walder. Arthur Orr, master, James H. Green. Josephine, master, Lewis Elliott; engineer, Richard Sutliff. Schooners—T. L. Parker, master, M. J. Pidgeon. C. P. Minch, master, Dave Williams. Carrington, master, Geo. Trotter. Cheney Ames, master, Thomas Myers.

Mr. Chas. Hebard, Pequaming, Mich.: Steamers—Charles Hebard, master, Jas. Parsons; engineer, Wm. Schumacker. Annie M. Peterson, master, Chas. Bough. Aloha, master, Wm. Elliott. Annabell Wilson, master, Daniel Nathan. Daniel L. Hebard, (tug), master, Hugh McKenzie; engineer, Jos. Greenleaf. Allenton, (tug), master, Wm. Granger; engineer, Franklin Wilde. Jay C. Morse, (tug), not assigned. Yacht Morgan, not assigned.

Union Transit Co., Buffalo: Steamers—J. M. Nicol, master, William McLean; engineer, George Tretheway. J. V. Moran, master, John L. McIntosh; engineer, James H. Countryman. W. H. Stevens, master, J. H. Maloy; engineer, J. E. McSweeney. Avon, master, Norman McGuire; engineer, Fred F. Sherwood. Portage, master, John Tyrney; engineer, George W. Haig. Eber Ward, master, Alex. Clark; engineer, John R. Judge. James Fiske, Jr., not assigned.

Northern Steamship Co., Buffalo: Steamers—Northern Light, master, M. J. Haberer; engineer, Frank Herringer. Northern Queen, master J. F. Vaughn; engineer A. T. Stewart. North Wind, master, Delos Waite; engineer, Thomas Jackman. Northern Wave, master, Martin Nilan; engineer, J. J. Darcy. North Star, master, William Thorne; engineer, W. T. Pike. The masters of the North King and engineers of the two passenger boats of the line have not yet been selected definitely.

Messrs. R. P. Fitzgerald & Co., Milwaukee: Steamers—Philip D. Armour, master, F. D. Chamberlin; engineer, James Rossan. Wiley M. Egan, master, Fred. Howe; engineer, Fred. Coleman. R. P. Fitzgerald, master, Leslie E. Boyce; engineer, B. McNeill. John Plankinton, master, Lewis H. Powell; engineer, Wm. G. Fell. Denver, master, P. Christenson; engineer, John Smith. Omaha, master, David Wilson; engineer, Chas. Beudschneider. Pueblo, master, Duncan Stalker; engineer, Alex. Staley. Topeka, master, John Tower; engineer, A. Wilcox.

The Ogdensburg Transportation Co., Ogdensburg, N. Y.: Steamers—Geo. Smith, master, W. S. Shay; engineer, John N. Phillips. J. R. Langdon, master, Harvey Brown; engineer, D. G. Costello. H. R. James, master, James Owen; engineer, James Turnbull. F. H. Prince, master, D. A. Kiah; engineer, Robert Chestnut. A. McVittie, master, W. H. Williams; engineer, A. D. Houghton. W. J. Averell, master, W. D. Wait; engineer, John Alexander. W. A. Haskell, master, E. B. Shay; engineer, Maurice Gere. W. L. Frost, master, J. W. Goodrich; engineer, James Chestnut.

Calvin & Co., Garden Island, Ont.: Steamers—D. D. Calvin, master, A. Malone; engineer, T. C. Smith. Bothnia, master, Geo. Brian; engineer, R. Veech. Armenia, master, Chas. Coons; engineer, Geo. Hazlett. Chieftain, master, John Sullivan; engineer, Thos. Gray. Parthia, master, David Lafavre; engineer, Geo. Sauve. Johnston, master, D. Lafavre, Jr.; engineer, Ed. Phelix. Bluebell, master, John Dix; engineer, Fred. Lafavre. Reginald, master, John Doyle; engineer, John Kennedy. Schooners—Ceylon, master, H. Smith. Augustus, master, Jos. Achee. Valencia, master, John Ferguson. Norway, master, John Harris.



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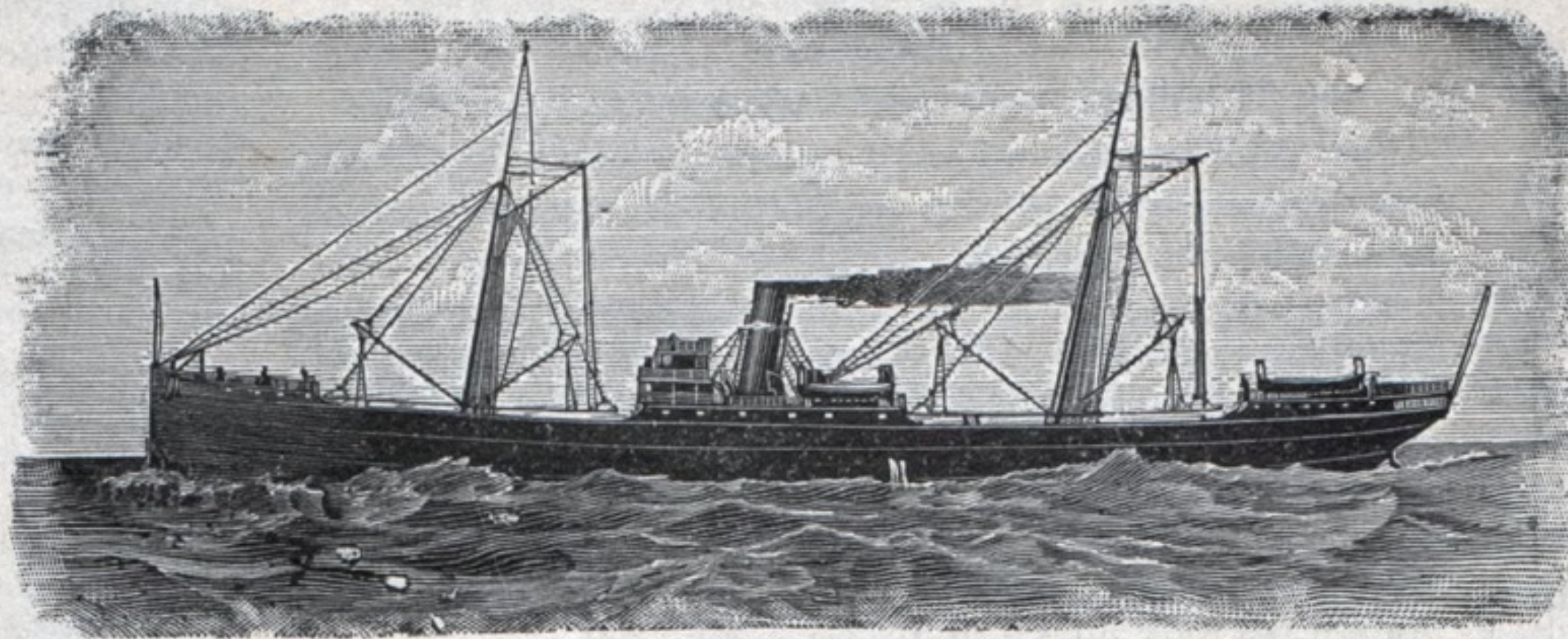
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DREDGING.

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### THE BANNER OF THE SEA.

A SONG.

By wind and wave the sailor brave has fared  
To shores of every sea,  
But never yet have seamen met or dared  
Grim death for victory.  
In braver mood than they who died  
On drifting decks in Apia's tide,  
While cheering every sailor's pride,  
The Banner of the Free!

Columbia's men were they who then went down  
Not knights nor kings of old;  
But brighter far their laurels are than crown  
Or coronet of gold.  
Our sailor true of any crew  
Would give the last long breath he drew  
To cheer the old red, white and blue,  
The banner of the Bold!

With hearts of oak through storm and smoke and flame,  
Columbia's seamen long  
Have bravely fought and nobly wrought that shame  
Might never dull their song;  
They sing the country of the free,  
The glory of the rolling sea,  
The starry flag of liberty,  
The banner of the strong!

We ask but this, and not amiss the claim,  
A fleet to ride the wave,  
A navy neat to crown the state with fame,  
Though foes or tempests rave,  
Then as our fathers did of yore,  
We'll sail our ships to every shore,  
On every wind will soar  
The Banner of the Brave!

Oh! This we claim, that never shame may ride  
On that wave with thee,  
Thou ship of state whose timbers great abide  
The home of liberty.  
For so our gallant Yankee tars,  
Of daring deeds and honored scars,  
Will make the banner of the stars  
The Banner of the Sea!

(Communicated by Capt. Charles Gale, Sarnia, Ont.)

During 1897, the steamers on the Official Register of the United Kingdom increased by 68 vessels, and 159,057 tons, while sailing vessels decreased by 358 vessels, and 150,430 tons. The total number of vessels on the Register has therefore decreased by 290, and the total tonnage has increased by 8,627 tons during the year.

### VISIBLE SUPPLY OF GRAIN

As compiled for The Marine Record, by George F. Stone,  
Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY. Bushels.
Buffalo .....	706,000	1,033,000	88,000	5,000	227,000
Chicago .....	8,153,000	7,128,000	1,378,000	843,000	425,000
Detroit .....	122,000	11,000	38,000	27,000	.....
Duluth and Superior .....	2,920,000	2,920,000	2,837,000	1,292,000	539,000
Milwaukee .....	108,000	123,000	88,000	79,000	14,000
Montreal .....	113,000	45,000	932,000	37,000	37,000
Oswego .....	.....	.....	.....	.....	.....
Toledo .....	243,000	623,000	297,000	15,000	.....
Toronto .....	32,000	.....	15,000	.....	10,000
On Canal .....	.....	.....	46,000	.....	.....
On Mississippi .....	.....	121,000	.....	.....	.....
Grand Total .....	32,415,000	42,644,000	12,854,000	3,409,000	1,656,000
Corresponding Date, 1897 .....	41,449,000	26,795,000	13,528,000	3,616,000	3,135,000
Decrease .....	597,000	.....	309,000	167,000	245,000

While the stock of grain at lake ports only is here given, the total shows the figures for the entire country except the Pacific Slope.

### MATHEMATICAL BEAUTIES OF STEEL MAGNETS (COMMUNICATED.)

Every well-made steel magnet, cylindrical or prismatical, with its ends cut square to its axis, has some wonderful mathematical properties, illustrated by the following diagram:

Draw a straight line equal to the length of the magnet, and divide it into three equal parts. Call each part a unit, and from the center of the line with unity as radius describe a circle. Draw through the center a line at right angles to the first line intersecting the circle. Then you will find that the radius of the circle equals the smaller axis of an ellipse through the poles of the magnet and that the focii of the ellipse are the intersection points of the circle with the line representing the length of the magnet. The smaller axis of the ellipse equals the square root of one, equal unity; the larger axis equals the square root of two, equal to the distance of the poles from the center; and the line joining the extremities of both axes equals the square root of three. As the ends of the magnet are 1.5 from the center, the poles are 1.5 minus the square root of 2 equal 1.5 minus 1.414 = 0.086 from the extremities of the magnet, that is, 0.029 of its whole length.

Furthermore, the center and the focii of the ellipse are the centers of 3 circles of radius  $\frac{1}{2}$  covering the whole length of the magnet; and 3 circles of radius  $\frac{1}{3}$  cover the smaller diameter of the ellipse. A circle of radius 1.5 encloses the whole construction. By means of this diagram the square roots of all numbers up to 37 are found graphically, after a little study.

Moreover, as the extremities of the larger diameter of the ellipse indicate the position of the poles, so the extremities of the smaller diameter indicate the point at which the deflection by a foreign magnetic pole at right angles to the magnetic needle at its center, is a maximum.

The position of this point in respect to the poles, is at an angle of  $35^{\circ} 16'$  to the axis of the magnet; from which it is evident that the maxima of magnetic attraction and repulsion follow the same law as the greatest intensity of light.

JOHN MAURICE.

Chicago, March 15, 1898.

### ADVICE TO BOILER ATTENDANTS.

The Manchester Steam Users' Association have just issued the following "Advice to Boiler Attendants." The Association named have made a new departure, and under the heading "Warnings" have given very precise instructions as to what a fireman should do when, as happens only too often, he has neglected his duty. Until now he was left to rely on his own judgment and resources whenever he found himself face to face with a threatened explosion:

#### GENERAL WORKING.

Treat your boilers with care and attention. Accidents are thereby prevented, expenses reduced, and the labor of firing lessened.

**WATER LEVEL.**—Before lighting fires see that there is sufficient water in the boiler. Test the water gauges frequently and keep the water level steady.

**BLOW-OFF COCKS.**—Before lighting fires be sure that the blow-off cocks are closed and not leaking. Occasionally feel if the blow-off waste pipes are hot. Blow off from bottom before starting the engine. Sediment has then settled in the elbow pipe. Blow off the scum before stopping the engines, but only when the water level is at the correct height. At such times most of the scum has collected in the troughs.

**LIGHTING FIRES.**—Sudden changes of temperature may produce fractures or start leakages. Therefore never raise steam hurriedly. The top and bottom of a boiler should grow warm together. If convenient, fill the boiler with warm water through the economiser. If the boiler water is cold, allow fully six hours for raising steam. If pressed for



time, fill the boiler to the top of the water gauge, fire slowly, and keep the safety valve open until steam blows off freely. After closing the safety valve, blow out the bottom cold water till the working level is reached. The pressure may now be raised more quickly.

**SMOKE PREVENTION.**—Smoke and imperfect combustion are caused by an insufficient air supply or by premature cooling of the flames. Therefore, after coaling, when the fires are black, admit air either at the door or through the split bridge. It is less wasteful to admit too much air than too little. With smoky boilers or when hard pressed, keep the fires thin and even. Fire steadily. Don't coal all furnaces at once. Coal each furnace on one side at a time.

**EMPTYING BOILERS.**—Do not empty the boiler while steam is up.

**OVERHAULING, CLEANING AND INSPECTION.**—Clean the boiler monthly or oftener, remove the scale while soft; if possible while emptying the boiler. Sweep the soot of the boiler plates and clean the flues every three months, as well as on the occasion of the annual inspection. All leakages should be stopped, any cause of dampness in the setting should be removed, corrosion should be arrested. The fusible plugs should be cleaned on the fire side and water side once a month, and the fusible metal should be renewed once a year at the time of the annual inspection. All cocks should be kept oiled, and, unless asbestos, packed, they should be overhauled once every month. These cocks, the feed valves, steam stop valves, and all safety valves, should be overhauled annually on the occasion of the inspector's visit.

#### WARNINGS.

**MANHOLES.**—Before opening the manholes ease the safety valve so as to be quite sure that there is no pressure in the boiler. Before entering a boiler secure the steam valves and blow-off cocks.

**SAFETY VALVES AND LOW-WATER ALARMS.**—The most disastrous explosions have happened with boilers whose safety valves had been jammed down or overloaded. Never overload or tamper with safety valves or with low water alarms. Ease or test them regularly every day. Be sure that they are in working order. If they will not work properly, reduce the steam pressure and then report to the manager.

**STOP VALVES AND STEAM PIPES.**—Numerous fatal accidents have happened to boiler attendants while opening valves or drain cocks of steam pipes which had accidentally become filled with water. This water should be drained off, but only when the pipe is shut off from the boiler. The cracking noises which are sometimes heard in steam pipes, generally when opening a steam stop valve or a drain cock,

are a sign that water is being shot about by the live steam. Retire at once, for the next blow may be an explosion. Steam pipes which slope downwards from the boiler stop valve to the engine appear to be quite safe. Horizontal pipes, particularly if their ends are turned up, are dangerous. They should be fitted with steam traps, or at least with drain cocks, and should always be kept dry.

**COLLAPSED FURNACES.**—(1) If, during the ordinary working of a Lancashire or Cornish boiler, the water was seen in the glass less than half an hour ago, but has disappeared, due to the feed having stopped, then probably no harm has yet been done. If the water was not seen for a long time, or if a mistake was made when last looking at the gauge glass, or if the water has disappeared suddenly and unaccountably, then there is a possibility that the furnace tops have come down, or are coming down, due to overheating. In either case cool the plates from both sides as quickly as possible. Open the furnace doors to admit cold air, but don't disturb the fires, ease the safety valves so as to cause priming. The rising froth is not so dangerous as cold feed water, and will help to cool and stiffen the over-heated plates. Afterwards increase the feed till the water shows in the gauge glass. (2) If there is much scale, oil, or refuse in the boiler, the furnace sides and not the tops usually bulge in, generally very slowly. In this case cool the plates from the fire side; open the doors; if possible cover the fires with damp ashes.

When exposed to these dangers the boiler attendant may prefer to retire. He should certainly not expose himself unnecessarily in front of the furnaces, and should warn others of the danger.

#### GENERAL WARNINGS.

Don't overload the safety valves, or tamper with them. Don't let the water-level sink out of sight. Don't allow the gauge cocks to set fast. Don't open the steam stop valves hurriedly. Don't empty the boiler while steam is up. Don't use unknown scale solvents or compositions.

#### GRAIN AT CHICAGO.

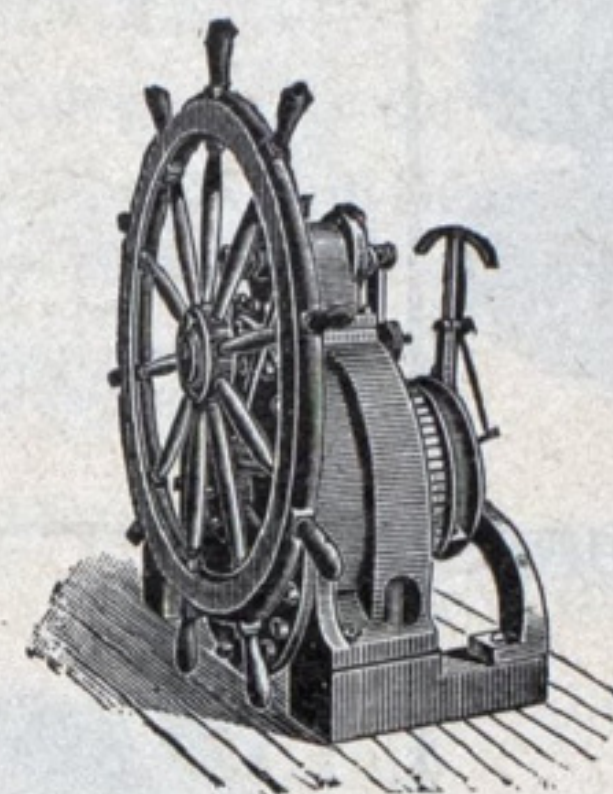
The stocks of grain in Chicago elevators last Saturday evening were 9,734,000 bushels of wheat, 24,121,000 bushels of corn, 1,510,000 bushels of oats, 1,041,000 bushels of rye, and 528,000 bushels of barley. Total, 26,934,000 bushels of all kinds of grain, against 30,889,000 bushels a year ago. For the same date the secretary of the Chicago Board of Trade

states the visible supply of grain in the United States and Canada as 32,415,000 bushels of wheat, 42,644,000 bushels of corn, 12,854,000 bushels of oats, 3,409,000 bushels of rye, and 1,656,000 bushels of barley. These figures are smaller than the corresponding ones of a week ago by 597,000 bushels in wheat, larger by 1,173,000 bushels in corn, and smaller by 309,000 bushels in oats. The visible supply of wheat for the corresponding week of a year ago decreased 1,319,000 bushels.

#### PROPOSALS.

U. S. ENGINEER OFFICE, Duluth, Minn., March 10, 1898. Sealed proposals for building Concrete Footing Blocks for superstructure for south pier, Duluth ship canal, will be received here until noon, April 11, 1898, and then publicly opened. Information furnished on application. Clinton B. Sears, Major, Engrs. 11-14

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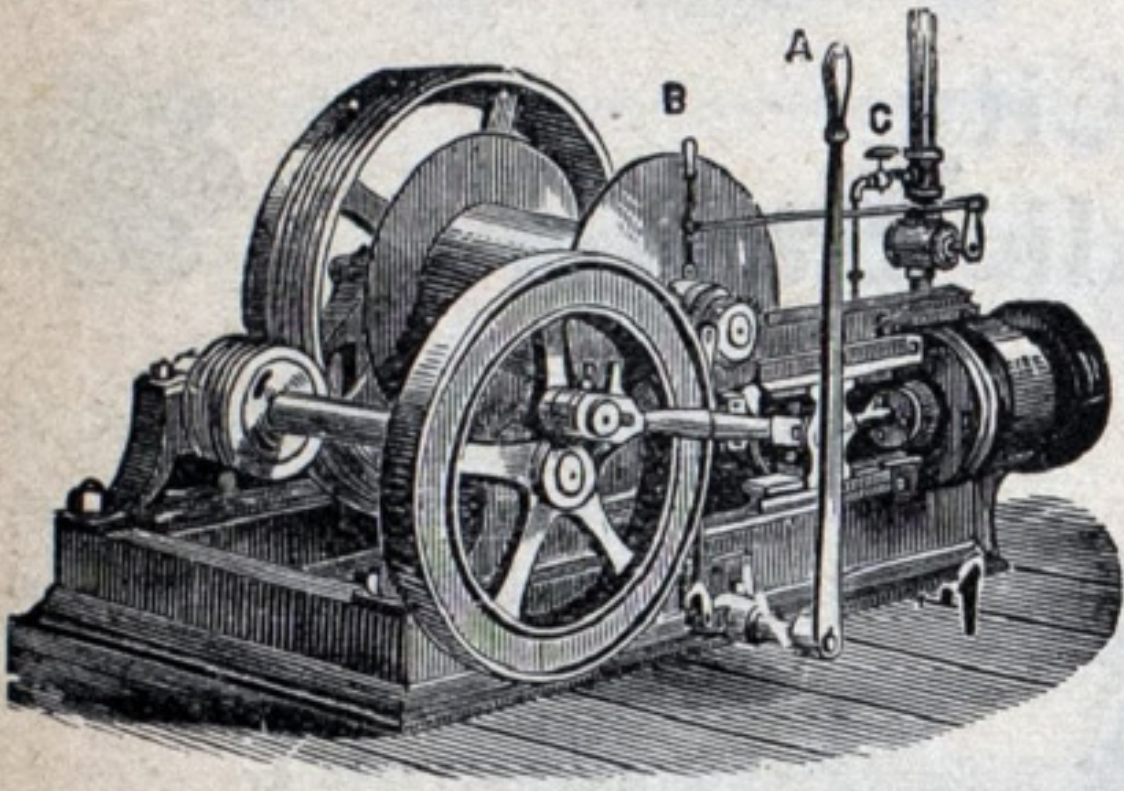






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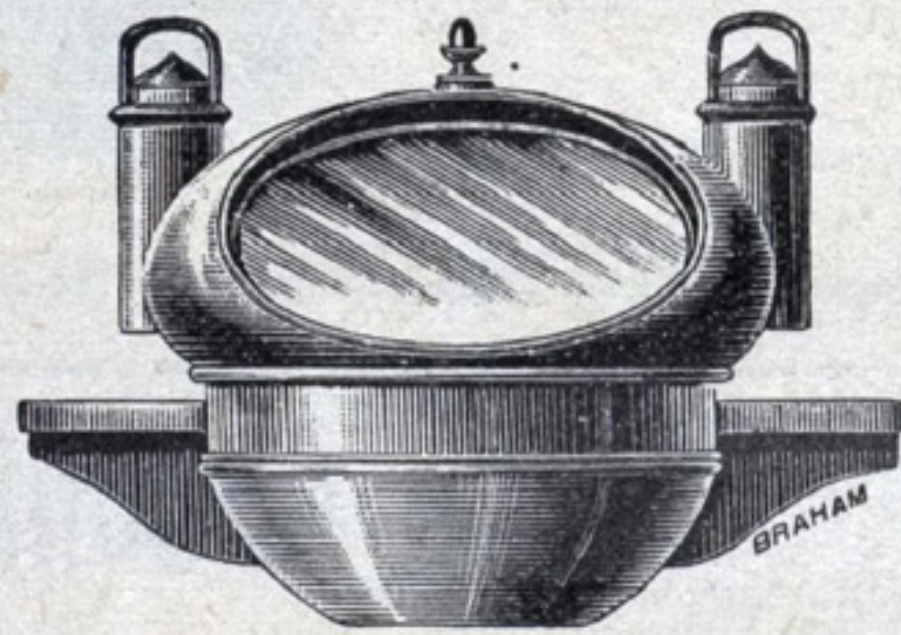
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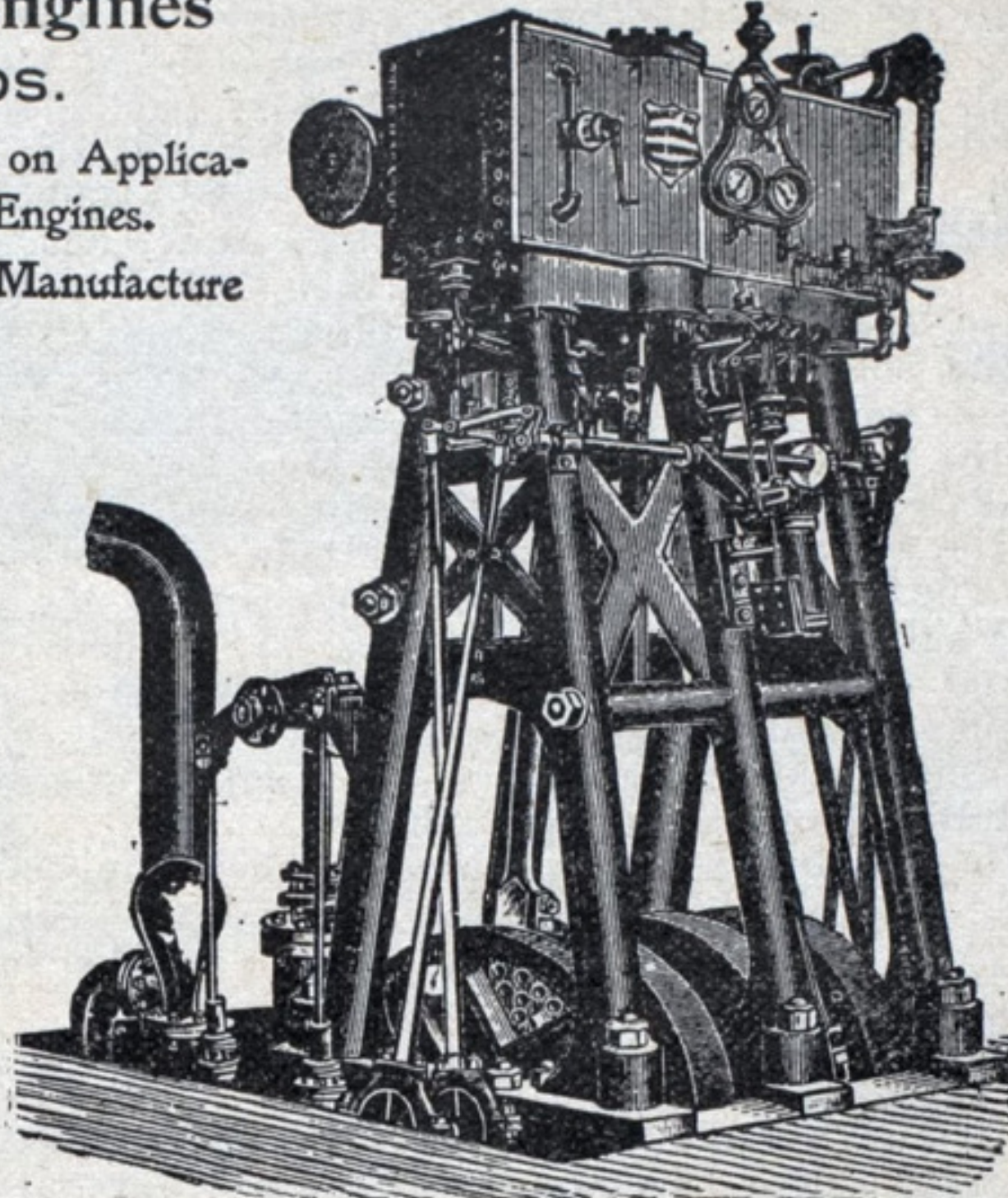
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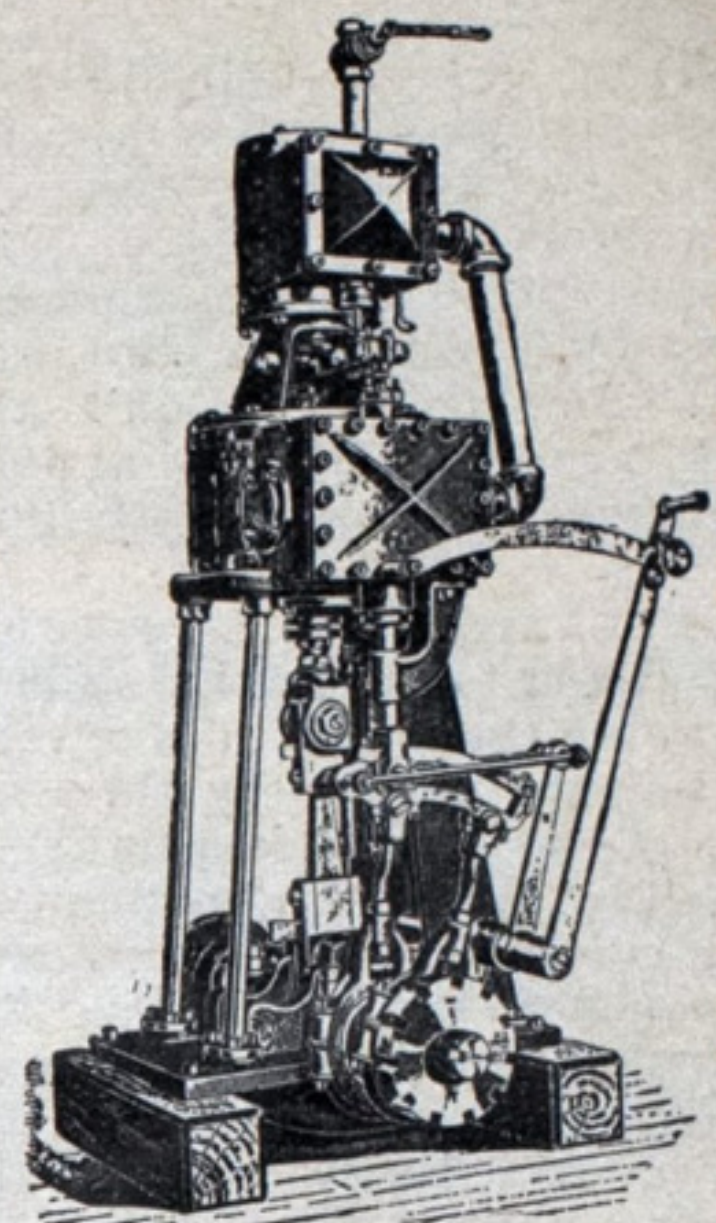
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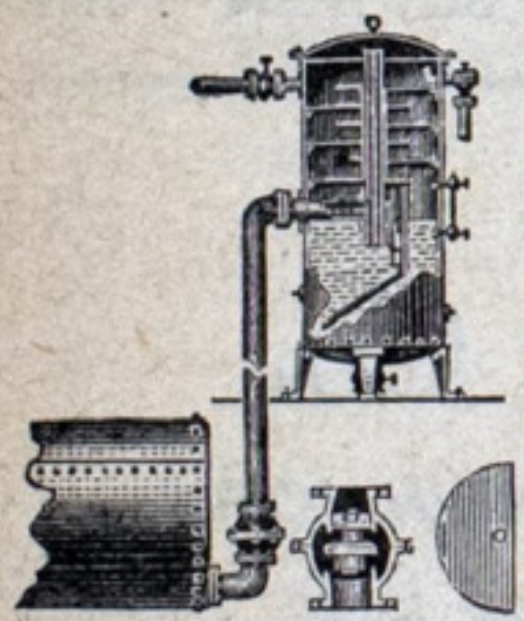
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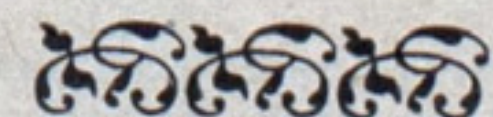
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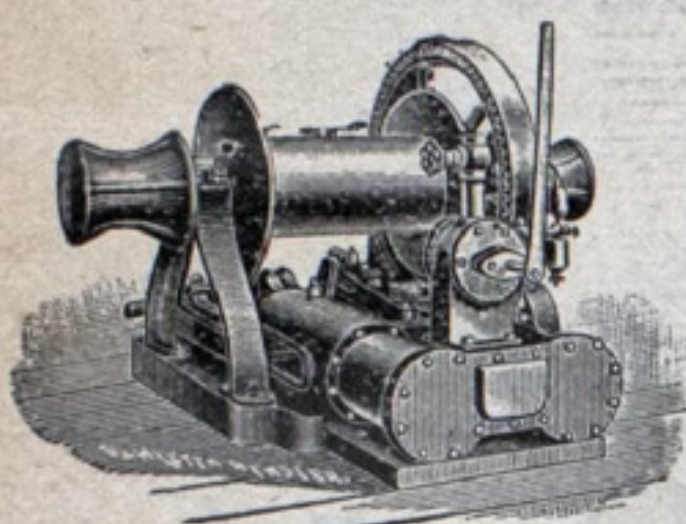
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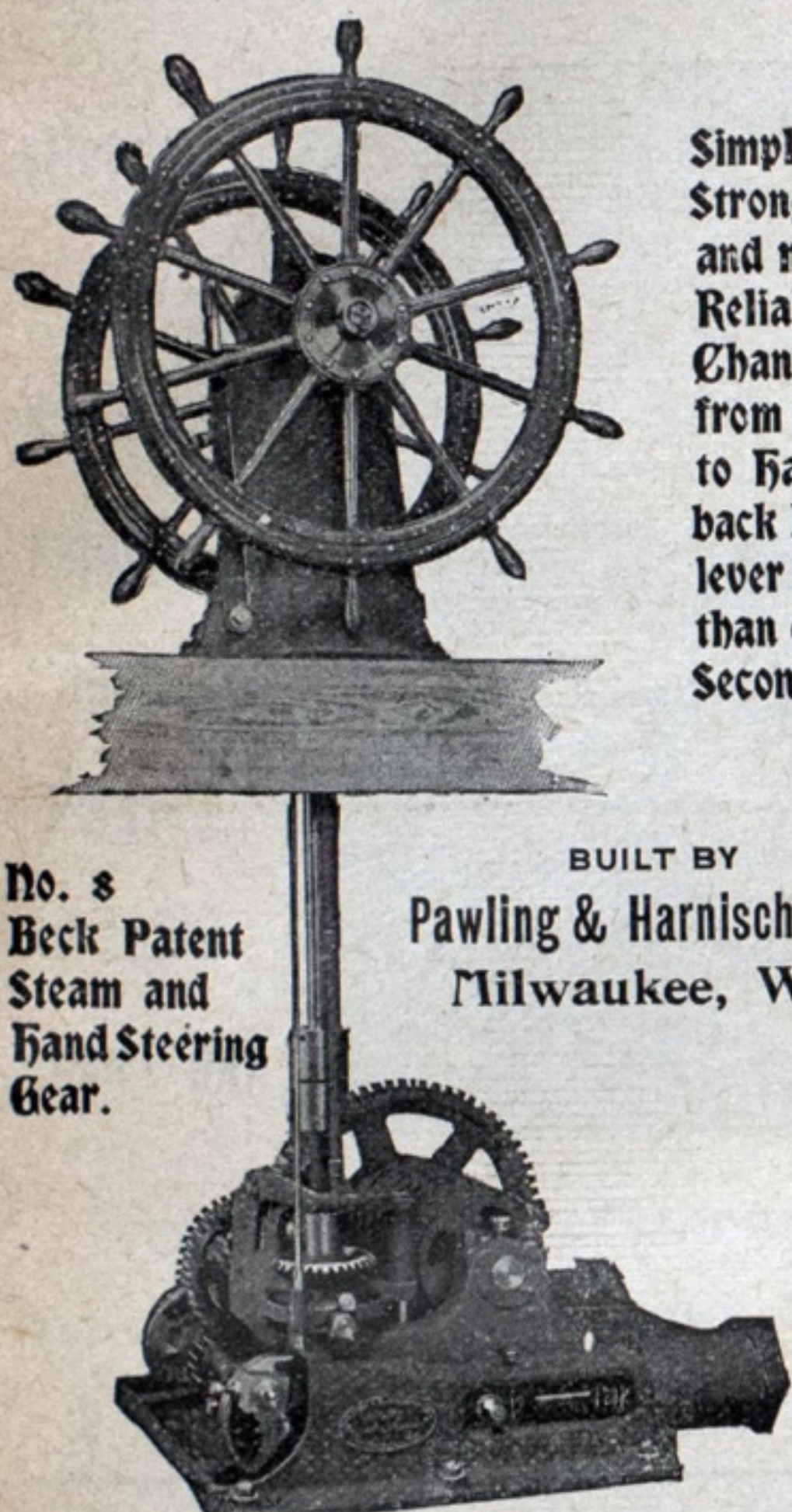
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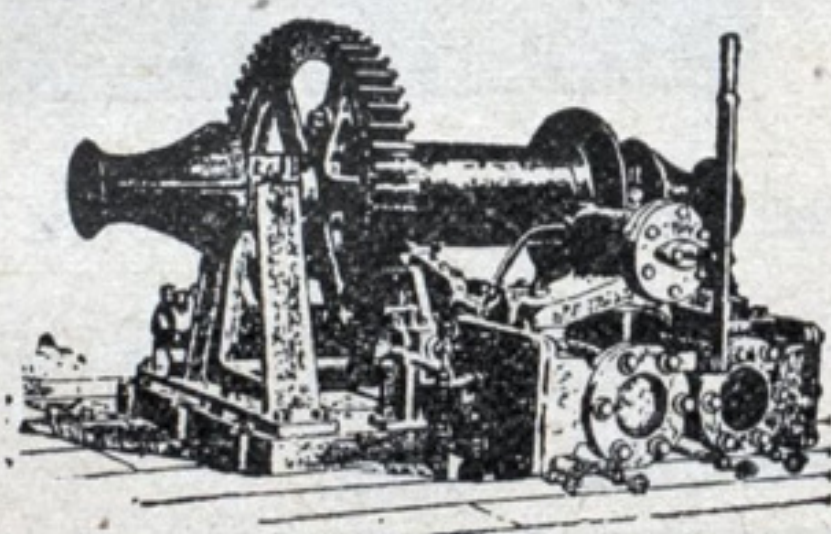
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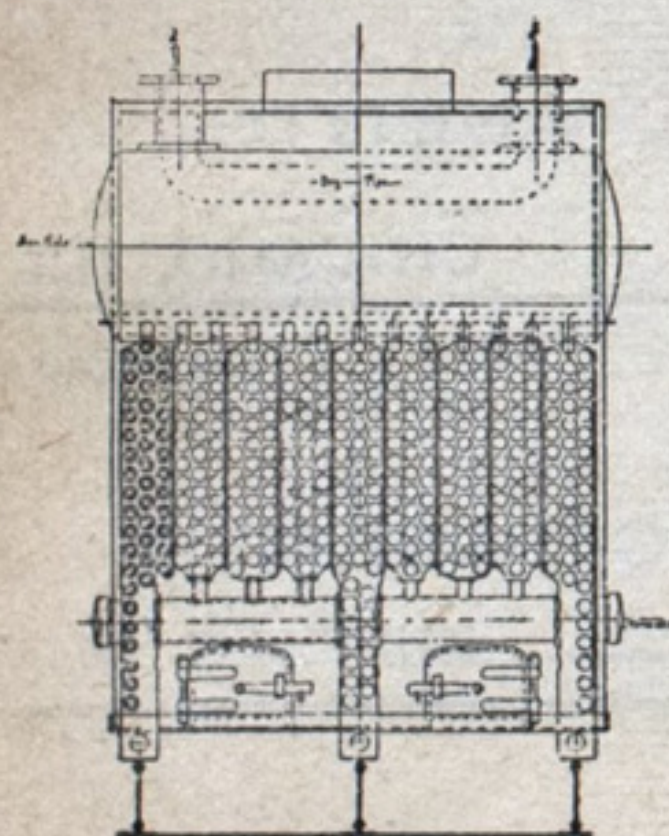
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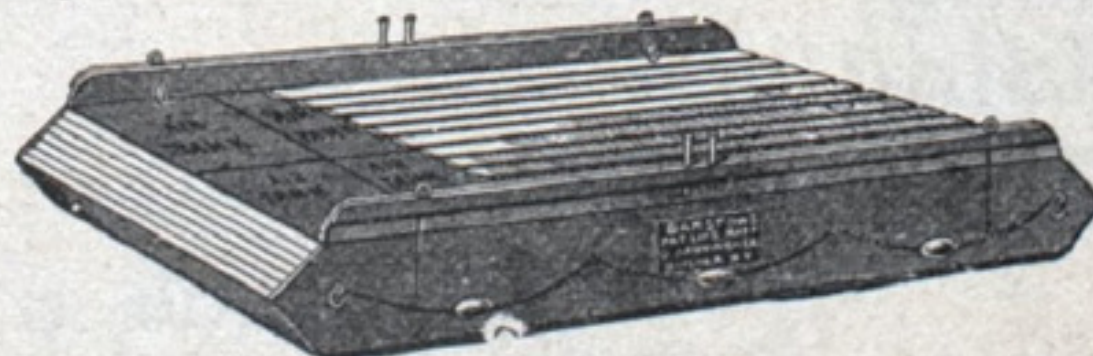
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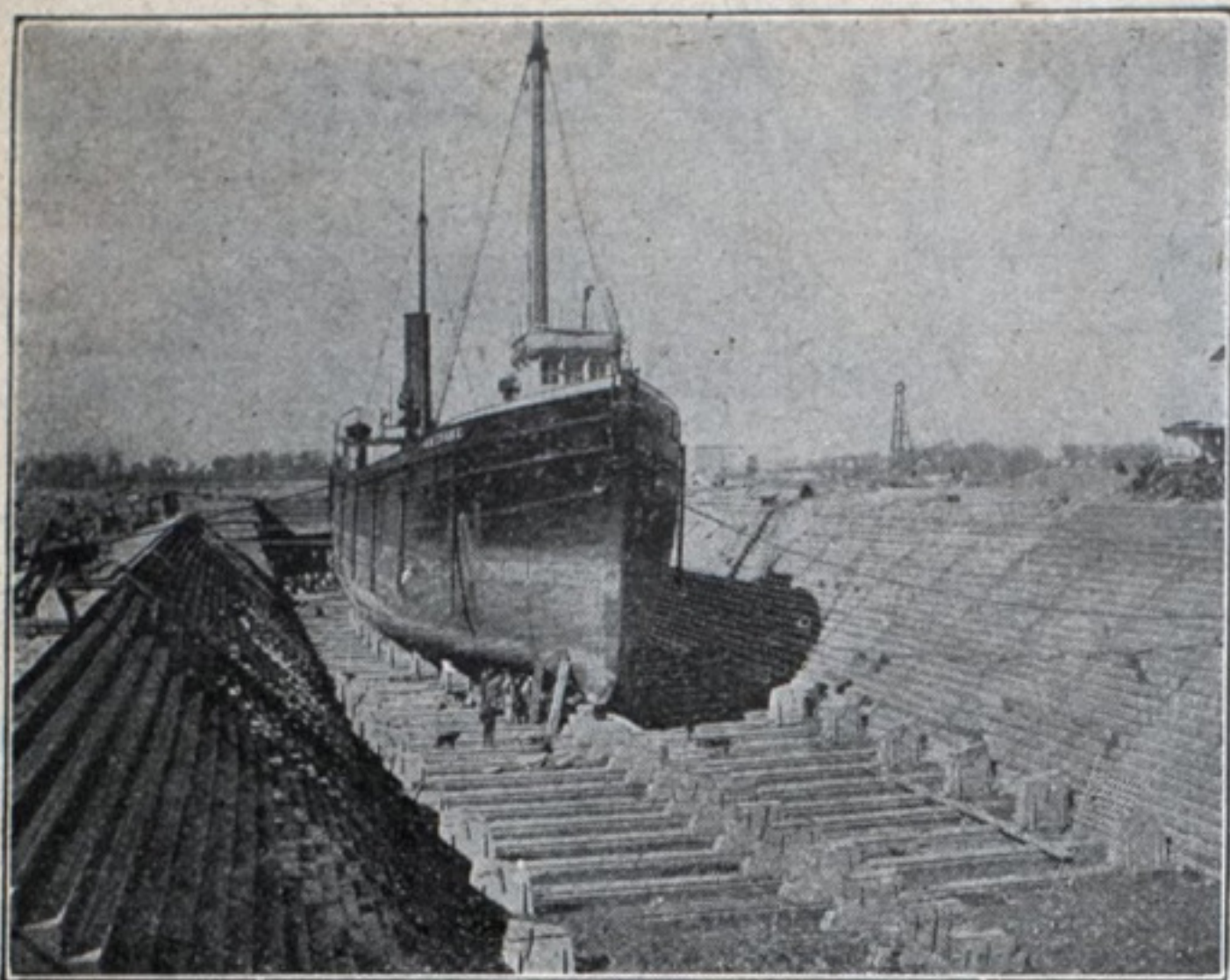


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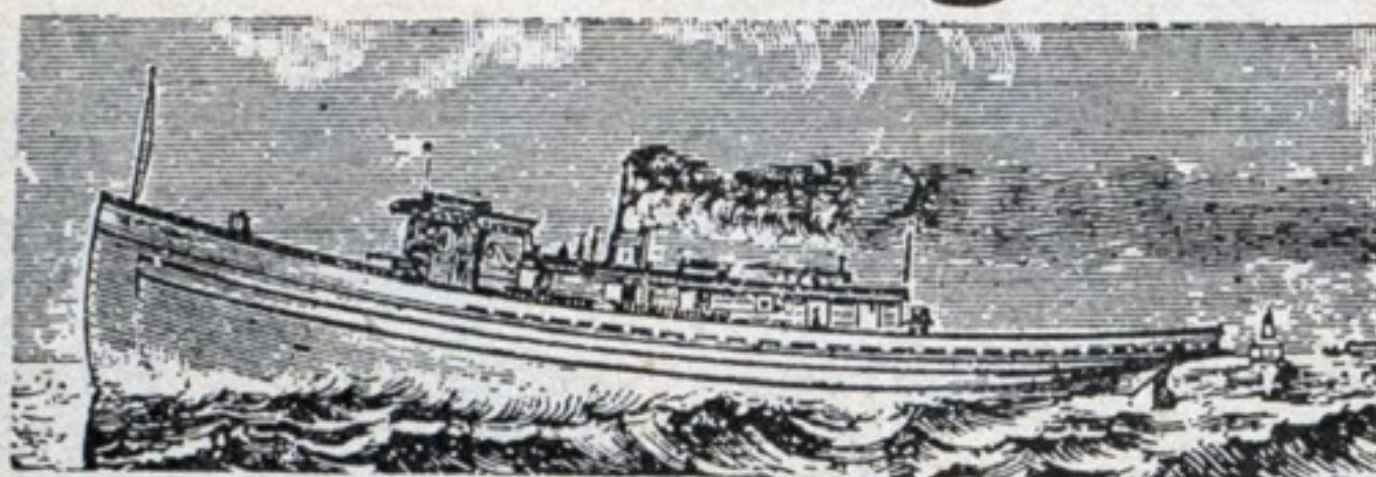
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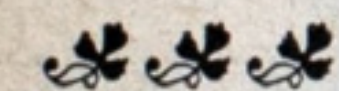
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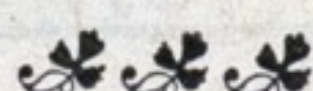
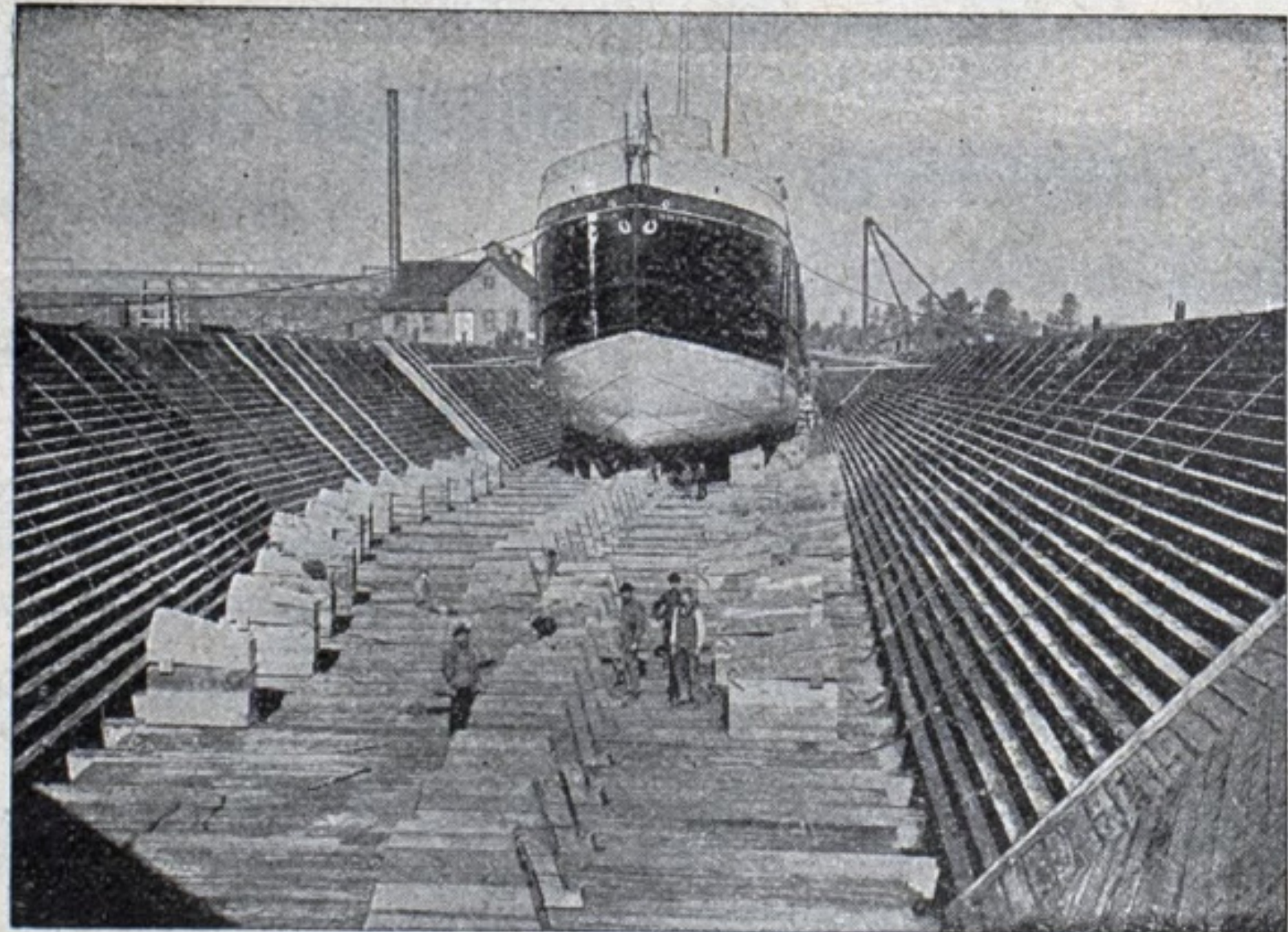
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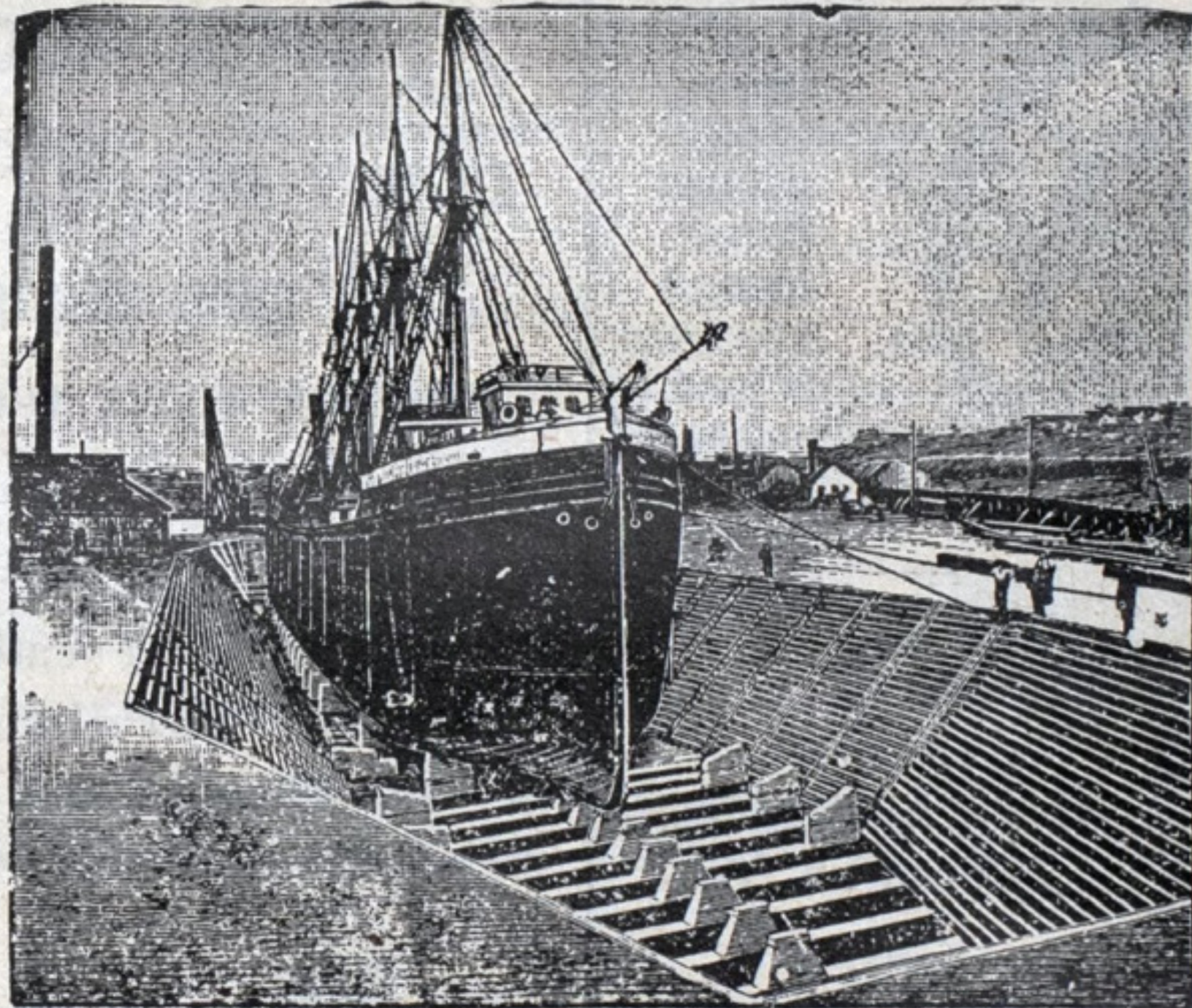
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